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Irish Endocrine Society 43rd Annual Meeting

11th and 12th October 2019

Ardilaun Hotel, Galway

Local Organiser: Doctor Marcia Bell

University College Hospital, Galway

Royal Academy of Medicine in Ireland

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Disclosure Statement

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**Friday 11th of October 2019**

**12.00 pm:** **IES Paediatric Symposium**

**12.00 - 12.05 pm**: **Welcome and Introduction**

**Dr Ciara McDonnell**

**12.05 pm** **OC1. Quality of life dimensions in children with type 1 diabetes**

**Dalton N, Evers J, Khalil M, Neylon O, Scully P, O’Gorman CS.**

**Department of Paediatrics, University of Limerick.**

**12.20 pm** **OC2. Infrared Thermography as a Measure of Brown Adipose Tissue and its relationship to body composition, fasting glucose and lipids in 8-10 year old males**

**Hutchings EK1, 2, Ong FJ1, Ahmed BA3, Gunn E1, Oreskovich SM1, Steinberg GR3,4, Morrison KM1**

**Department of Pediatrics, McMaster University, Hamilton, ON, Canada1, RCSI School of Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland2, Department of Biochemistry and Biomedical Sciences, McMaster University, Hamilton, ON, Canada3, Division of Endocrinology and Metabolism, Department of Medicine, McMaster University, Hamilton4**

**12.35 pm** **OC3. Diabetic Ketoacidosis at Type 1 Diabetes Onset in a National Incident cohort over a 5 year period**

**E. Roche 1,2, A. McKenna 1, K. Ryder 3, H. Fitzgerald 2, M. O'Regan 4, H. Hoey 1,The Irish Childhood Diabetes National Register**

**1The Department of Paediatrics, the University of Dublin, Trinity College Dublin, Ireland, 2The Department of Paediatric Growth, Diabetes and Endocrinology, Childrens’ Hospital Ireland (CHI) at Tallaght University Hospital, Dublin, Ireland, 3The National Immunisation Office, Dublin, Ireland, 4The University of Dublin, Trinity College Dublin, Department of Statistics, Dublin, Ireland**

**12.50pm IES Paediatric Guest Lecture**

**“Advances in pathophysiology and treatment of paediatric hypoparathyroidism”**

**Professor Agnes Linglart**

**Professor of Paediatrics, Bicetre Paris Sud Saclay University Hospital, Paris, France.**

**1.30pm Soup and Sandwiches**

**IES ANNUAL RESEARCH MEETING**

**1.55 pm Welcome and Introduction**

**Professor B Kinsley**

**President, Irish Endocrine Society**

**2.00 pm OC4. Is repeat fine needle aspiration required in thyroid nodules with initial benign cytology? Results from a large Irish series**

**HM Zia-ul-Hussnain, M Quinn, E Dolan, M Sherlock, CJ Thompson, D Smith, JP O’Neill, M Leader, H Barrett, A Hill, M Morrin, C Ryan, A Agha**

**Departments of Endocrinology, Histopathology, Surgery and Radiology Beaumont Hospital Dublin Ireland**

**2.15 pm OC5. Lipidomic profiling uncovers altered phosphatidylcholine and lysophosphotidylcholine concentrations in subjects with type 1 diabetes mellitus. McGowan A1, Widdowson WM1, Boran G2, Moore K1, Gibney J1**

**Robert Graves Institute1 and Department of Chemical Pathology2, Tallaght University Hospital, Dublin 24**

**2.30 pm IES Hadden Lecture**

**“The modern management of Acromegaly”**

**Professor WB Drake**

**St Bartholomews Hospital, London, UK**

**3.30 – 4.25pm Coffee and Poster Viewing Session**

**4.30pm OC6. The HDL proteome as a novel indicator of metabolic health in obesity - the metabolic hdl index score (MHI)**

**W Guo\*1,2, Y Lenighan\*2, E Dillon2, S Curley1,2, M O’Reilly1,2, A Mat3, J Gibney4, A Hogan3, S Pennington2, H Roche1,2, D O’Shea3 F McGillicuddy1,2.**

**UCD Diabetes Complications Research Centre1, UCD Conway Institute, University College Dublin, Dublin 42; Department of Endocrinology at St Vincent's University Hospital, Dublin 43, Tallaght Hospital, Dublin 24, Ireland4.**

**4.45 pm OC7. A randomized controlled trial of transcutaneous electrical nerve stimulation of T6 for appetite control in obese subjects on a low-calorie diet.**

**Hutchinson K1, Shah W2, Chaney S2, Sreenan S3, Cormican LJ2, Burke CM2 ,Carlson O4, Egan JM4, Faul JL2.**

**Eurofins, Sandyford, Dublin 18, Ireland1, Asthma Research Centre, Connolly Hospital Blanchardstown, Dublin 15, Ireland2, Department of Endocrinology, Connolly Hospital Blanchardstown, Dublin 15, Ireland3, National Institute on Aging, National Institutes of Health, Baltimore, MD 21224, USA4.**

**5.00 pm OC8.The effects of acute hyponatraemia on bone remodelling markers in patients with subarachnoid haemorrhage.**

**A Garrahy1, I Galloway1, AM Hannon1, R Dineen1, M Javadpour2, WT Tormey3, MJ Mc Kenna4, PJ Twomey5, M Kilbane5, M Sherlock1, RK Crowley4, CJ Thompson1**

**Departments of Endocrinology1, Neurosurgery2, Chemical Pathology3, Beaumont Hospital and RCSI, Dublin. Departments of Endocrinology4 , Clinical Chemistry5, St Vincent’s University Hospital, Dublin.**

**5.15 pm OC9. Measuring 25-Hydroxyvitamin D levels early during pregnancy: a randomised clinical trial**

**CEH Fang1, M Hamill1, T Ahern1, C Collins2, M Gannon2,3, S Hoashi1,3**

**Department of Endocrinology, Midlands Regional Hospital, Mullingar1**

**Department of Obstetrics and Gynaecology, Midlands Regional Hospital, Mullingar2**

**School of Medicine, University College Dublin, Dublin3**

**5.30 pm OC10. Hyponatraemia in older patients is often untreated, despite greater mortality burden; results of a prospective cohort study.**

**O Thorpe1, M Cuesta1, WT Tormey2, M Sherlock1, DJ Williams3, CJ Thompson1, A Garrahy1**

**Academic Department of Endocrinology1, Department of Chemical Pathology2, Department of Geriatric and Stroke Medicine, RCSI and Beaumont Hospital, Dublin3.**

**5.45 pm OC11. Modified-release hydrocortisone improves cardiovascular risk profile in patients with primary and secondary adrenal insufficiency**

**Dineen R1, KS Ahmed2, Frizelle I2,Gunness A2, Garrahy A1, Hannon AM1, Smith D1, McDermott J3, Healy ML4, Agha A1, Pazderska A4, Gibney J2, Thompson CJ1, Behan LA2, Sherlock M1.**

**Academic Department of Endocrinology1, Beaumont Hospital/ RCSI,Department of Endocrinology, Tallaght University Hospital2,Department of Endocrinology, Connolly Hospital3, Department of Endocrinology, St James Hospital, Dublin4.**

**Saturday 12th of October 2019**

**8.00 – 9.00 am** **IES Annual General Meeting**

**Oral Presentations**

**9.15 am** **OC12. Fat mass is positively associated with hunger and energy intake at extremes of obesity**

**A Grannell1,2, W Al-Najim1,2, N Kapoor2, A Mangan2, N Docherty2, JC Murphy1, CW le Roux2, C Davenport1,3**

**MedFit Proactive Healthcare, Blackrock, Co Dublin1, Diabetes Complications Research Centre, Conway Institute, School of Medicine and Medical Sciences, University College Dublin, Dublin2, Department of Endocrinology, St Columcille’s Hospital, Dublin3**

**9.30 am OC13. The use of direct measures of behaviour to predict weight loss in patients with obesity**

**W. Al-Najim1,2, N. Kapoor1, A. Mangan1, B. Dehestani1, C. Menezes1, A. Grannell1,2, G. Iatroudi1s, C. Davenport3, J. Murphy2, C. W. le Roux1,2**

**Diabetes Complications Research Centre, Conway Institute, School of Medicine and Medical Sciences, University College Dublin, Dublin1 MedFit Proactive Healthcare, Blackrock, Co Dublin2, Department of Endocrinology, St Columcille’s Hospital, Dublin3**

**9.45 am OC14. Participation in a milk-based meal replacement programme is associated with increased fasting ketosis which is proportional to the degree of weight loss in adults with severe and complicated obesity.**

**M.F. Rafey1, C. Murphy1, R.H.A Abdalgwad2, H. Griffin1, P.M. O’Shea3, F.M. Finucane1,2.**

**Bariatric Medicine Service, Centre of Diabetes, Endocrinology and Metabolism, Galway University Hospitals and HRB Clinical Research Facility, Galway, Ireland1, Department of Medicine, National University of Ireland Galway2, Dept. of Clinical Biochemistry, Galway University Hospitals, Galway Ireland3**

**10.00 am OC15. Specificity and signalling of GPR120 agonists using CRISPR/Cas9 gene editing**

**A.I Owolabi, A.G. McCloskey, P.R. Flatt, A.M. McKillop**

**Biomedical Sciences Research Institute, Ulster University, Coleraine, Northern Ireland.**

**10.15 am OC16. Apelin-13 analogues were as effective as incretin mimetics in treating streptozotocin induced diabetic mice**

**FPM O’Harte, V Parthsarathy & PR Flatt**

**Diabetes Research Group, Institute of Biomedical Sciences, Ulster University, Coleraine, Co. Derry, N. Ireland**

**10.30 am**  **IES McKenna Lecture**

**“The ups and downs of cortisol: from Endocrinology to Intracronology”**

**Professor Mark Sherlock,**

**Consultant Endocrinologist Beaumont Hospital and RCSI Medical School**

**11.00 – 11.30 am Coffee and Poster Presentation session**

**11.30 am OC17. Hyperglycemic disruption of blood-retinal barrier phenotype in human retinal microvascular endothelial cells is mitigated with COMP-ANG1 treatment**

**K. D. Rochfort1, 2, L.S. Carroll3, P. Barabas4, T. M. Curtis4, B. K. Ambati3, N. Barron5, P. M. Cummins1, 2**

**School of Biotechnology, Dublin City University, Dublin, Ireland1 National Institute for Cellular Biotechnology, Dublin City University, Dublin , Ireland2 ,John A. Moran Eye Centre, University of Utah, Salt Lake City, Utah, USA3 , Wellcome-Wolfson Institute for Experimental Medicine, Queen’s University Belfast, Northern Ireland, UK4, National Institute for Bioprocessing Research & Technology, University College Dublin, Ireland5**

**11.45 am OC18. GCD59 as an early biomarker for GDM**

**D. Bogdanet1, J.A. Halperin2, D. Ma2, M.A. Luque-Fernandez3,4, G. Desoye5, F. Dunne1**

**National University of Ireland, Galway, Ireland1 , Divisions of Hematology, Brigham & Women’s Hospital2, Department of Epidemiology, Harvard T.H. Chan School of Public Health. Boston, MA3, Department of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, London, UK4, Department of Obstetrics and Gynecology, Medizinische Universitaet Graz, Graz, Austria5**

**12.00 pm OC19. Angiogenic factors and fetal growth in women with Type 1 Diabetes: A sub-analysis of the CONCEPTT trial**

**Bacon. S1, Burger. D2, Tailor. M2, Tomlinson. G3, Murphy. H4, Feig. DS1**

**Diabetes and Endocrinology in Pregnancy program, Mount Sinai Hospital and University of Toronto, Canada1, Department of Cellular and Molecular medicine, University of Ottawa, Canada2 , University Hospital Network, Toronto General Hospital, Toronto3, Department of Women and Children’s Health, Kings College London, UK4**

**12.15 pm** **OC20.**  **Identification of a diagnostic and prognostic miRNA signature in women with Gestational Diabetes Mellitus**

**Begoña Sánchez-Lechuga,Shona Pfeiffer,Luise Halang, Jochen H. M. Prehn, Antonio Campos-Caro, Maria M. Byrne, Cristina López-Tinoco**

**Centre for Systems Medicine, Department of Physiology and Medical Physics, Royal College of Surgeons in Ireland, 123 St. Stephen’s Green, Dublin 2, Ireland; 2Servicio de Endocrinología y Nutrición, Hospital Universitario Puerta del Mar, Cádiz, Spain; 3Department of Endocrinology, Mater Misericordiae University Hospital, Eccles Street, Dublin 7, Ireland.**

**12.30 pm OC21. Preliminary *in vitro* and *in vivo* evidence for the antidiabetic potential of blue whiting protein hydrolysates.**

**SJ Sharkey, CM McLaughlin,PJ Allsopp, FPM O’Harte**

**School of Biomedical Sciences, Ulster University, Coleraine, BT52 1SA, Northern Ireland.**

**12.45 pm OC22. Linking Diabetes and Dementia Risk: A Role for Aβ-42 induced activation of the NLRP3 Inflammasome? Results from the ENBIND Study**

**A Dyer1,2,3, I Batten2,3, CP Woods1,5, M Widdowson1,5, R Firth1,5, J Gibney1,5, D O'Neill1,2, R Reilly2,4, N Bourke2,3 , SP Kennelly1,2,5**

**Tallaght University Hospital, Dublin, Ireland, Dublin, Ireland1, Department of Medical Gerontology, Trinity College Dublin, Dublin, Ireland2, Trinity Translational Medicine Institute , Dublin, Ireland3, Trinity Centre for Bioengineering, Dublin, Ireland4, School of Medicine, Trinity College Dublin, Dublin, Ireland5**

**1.00 pm IES Summer Student Award Presentations**

**The impact of glycaemic control and hypoglycaemia on cognitive function in older patients with type 2 diabetes: a case-control study.**

**Benjamin Agnelli (Mentor Dr Antoinette Tuthill, Cork University Hospital)**

**Activity levels and cardiometabolic risk in children with type 1 diabetes mellitus.**

**Niall Dalton (Mentors Dr Orla Neylon and Professor Clodagh O'Gorman, University Hospital Limerick)**

**Four year follow up of health outcome status in women with previous gestational diabetes.**

**Evelyn O'Shea (Mentor Dr Antoinette Tuthill, Cork University Hospital)**

**1.15 pm** **Presentation of Irish Endocrine Society O’Donovan Medal (best oral presentation) and Montgomery medal (best poster presentation) and Award for Best Case/Case Series Award**

**Close of meeting**

**Oral Presentations**

**OC1 Quality of life dimensions in children with type 1 diabetes**

*Dalton N, Evers J, Khalil M, Neylon O, Scully P, O’Gorman CS.*

Department of Paediatrics, University of Limerick.

Aims:T1DM is one of the most prevalent chronic health conditions in youth with a rising incidence. Management regimes are often complex and demanding, being a source of significant stress for children and their families. The aim of this current study was to examine quality of life dimensions amongst young people with T1DM. Methods:The study was a regional level observational study within the University Hospital Limerick T1DM outpatient clinic, focusing on Quality of life dimensions measured using KIDSCREEN generic quality of life measures, a project funded by the European Commission. Results**:** 55 children completed the survey. The respondents were diagnosed a minimum of 2 years previously. 90% of respondents stated that life has been either very or extremely enjoyable with about 15% saying they were quiet often or very often sad. 85% of respondents stated that they would not change anything about their body. Over three-quarters stated that they were always or very often able to do the things they wanted to do. Over 80% of respondents felt that their parents were very or extremely understanding with 96% feeling very or extremely loved. Over 80% of respondents were very or extremely happy at school with 5% stated that they felt quite often bullied by other girls and boys.Conclusion:The results from this study show that despite the diagnosis and implications regarding T1DM, the children interviewed showed a high level of positivity and enthusiasm regarding home and school life as well as undertaking activities.

**OC2. Infrared Thermography as a Measure of Brown Adipose Tissue and its relationship to body composition, fasting glucose and lipids in 8-10 year old males**

*Hutchings EK1, 2, Ong FJ1, Ahmed BA3, Gunn E1, Oreskovich SM1, Steinberg GR3,4, Morrison KM1*

Department of Pediatrics, McMaster University, Hamilton, ON, Canada1, RCSI School of Medicine, Royal College of Surgeons in Ireland, Dublin, Ireland2, Department of Biochemistry and Biomedical Sciences, McMaster University, Hamilton, ON, Canada3, Division of Endocrinology and Metabolism, Department of Medicine, McMaster University, Hamilton4

Brown adipose tissue (BAT) is a thermogenic tissue, induced by cold and may be a therapeutic target for obesity and diabetes. The purpose of this study is to investigate the use of infrared thermography (IRT) as a method to detect BAT in children and to relate IRT BAT measures to adiposity, and metabolic health. The study population consisted of n=18, males with a mean age of 9.74 ± 0.93 years. The supraclavicular (SCV) and acromion (control) temperature were assessed using IRT before and after a 1-hour 180C cold exposure. SCV temperature pre (TSCV) and post cooling (Δ TSCV, Δ TSCV-Acromion, post-cold) were used as measures of BAT. Paired sample T-tests were used to compare mean SCV temperature pre and post cooling and to compare differences in BAT measurements on the left and right side. Pearson’s correlation for normally distributed data and Spearman’s Correlation coefficient for non-normally distributed data were used to assess correlations between variables. An increase in temperature post-cooling was measured in the left (p= 0.001), and right (p=0.029) SCV regions. TSCV was negatively correlated with body fat percentage r=-0.812, p= <0.001 and non-HDL cholesterol r= -0.537, p=0.018. Δ TSCV was negatively correlated with fasting glucose r=-0.622 p= 0.01. An increase in SCV temperature following cold exposure is measureable using IRT in children and may be representative of BAT activity. Negative correlations between adiposity, non-HDL cholesterol, glucose and BAT may demonstrate that low BAT activity is associated with the development of obesity and associated metabolic disturbances.

**OC3. Diabetic Ketoacidosis at Type 1 Diabetes Onset in a National Incident cohort over a 5 year period**

*E. Roche 1,2, A. McKenna 1, K. Ryder 3, H. Fitzgerald 2, M. O'Regan 4, H. Hoey 1,The Irish Childhood Diabetes National Register*

1The Department of Paediatrics, the University of Dublin, Trinity College Dublin, Ireland, 2The Department of Paediatric Growth, Diabetes and Endocrinology, Childrens’ Hospital Ireland (CHI) at Tallaght University Hospital, Dublin, Ireland, 3The National Immunisation Office, Dublin, Ireland, 4The University of Dublin, Trinity College Dublin, Department of Statistics, Dublin, Ireland

Introduction: Diabetic ketoacidosis (DKA) is a severe life-threatening complication of T1D with significant morbidity and persisting longterm adverse effects on metabolic control. Frequency of DKA at diabetes diagnosis varies widely in different populations, with estimates ranging from 12-80%. Preventing DKA at diagnosis is the most important therapeutic target in new onset diabetes second only to preventing diabetes itself. Objectives: Define and monitor the national frequency of DKA at diabetes onset in a paediatric population over a 5 year period and compare with a previous national study undertaken in 1997/8. Methodology: An established national prospective T1D incidence register with ascertainment levels in excess of 95%, was employed to monitor the frequency of DKA in those aged under 15 years in the period 2011-2015. The Chi-square test was used to compare groups. Results: In the period there were 1208 incident cases of T1D nationally, with detailed demographic data, of whom 31.6% were in DKA. The frequency of DKA remained relatively stable over the 5 year period as did DKA severity with 11.5%; 7.2%; and 12.9% presenting in severe, moderate and mild DKA respectively. There was no significant difference in DKA severity in the three age categories, namely: 0-4.99; 5-9.99; and 10-14.99 years. Of those presenting in severe DKA, 3.6% had a family history of T1D in a first degree relative. Frequency of DKA at diabetes diagnosis has changed little over time. Conclusions: The frequency of DKA at diabetes diagnosis is unacceptably high in Ireland and its reduction is an important therapeutic target.

**OC4. Is repeat fine needle aspiration required in thyroid nodules with initial benign cytology? Results from a large Irish series**

*HM Zia-ul-Hussnain, M Quinn, E Dolan, M Sherlock, CJ Thompson, D Smith, JP O’Neill, M Leader, H Barrett, A Hill, M Morrin, C Ryan, A Agha*

Departments of Endocrinology, Histopathology, Surgery and Radiology Beaumont Hospital Dublin Ireland

Background: Fine needle aspiration (FNA) is the preferred method for assessing thyroid nodules but concern remains about false negative results of up to 6% in some series. The primary aim of this study was to investigate the malignancy rate in nodules which were initially classified as benign (BTA classification Thy 2). The secondary aim was to look at the distribution of different cytological categories in a large cohort of patients. Methods: We retrospectively examined 719 nodules in 714 patients between 2013 to 2017. All FNAs were performed under US guidance. Nodules were cytologically classified according to the BTA guidelines. 53% of nodules were either followed up by ultrasonography or repeat FNA and rest were followed up clinically. Decision regarding follow up was done at a multidisciplinary meeting (MDM). Patients were followed for a median of 48 months (4-107months). Results: 604(84.5%) patients were female.558 nodules (77.6%) were classified as benign (thy2) ,82(11.1%) were thy1, 52(7.2%) were Thy3, 6(0.8%) were Thy4 and 15(2.0%) were Thy5. Five Thy 2 nodules (0.89%) were later diagnosed with thyroid cancer of which one had low initial cellularity, one was a co-incidental microcarcinoma in a colloid nodule and one was a cystic papillary carcinoma. All 5 went into remission following treatment with surgery +/- radioiodine therapy. Conclusion: With a well targeted FNA, the false negative rate of an initial benign thyroid FNA is very low so routine second FNA is not required in these patients. Multidisciplinary input is useful in informing decision making in those patients

**OC5. Lipidomic profiling uncovers altered phosphatidylcholine and lysophosphotidylcholine concentrations in subjects with type 1 diabetes mellitus.**

*McGowan A1, Widdowson WM1, Boran G2, Moore K1, Gibney J1*

Robert Graves Institute1 and Department of Chemical Pathology2, Tallaght University Hospital, Dublin 24

Mechanisms through which Type 1 diabetes(T1DM) promotes atherosclerosis are incompletely understood. Lipidomics, the quantitative and qualitative analysis of the lipidome, uses mass spectrometry to characterise lipid pathways in much greater detail than has previously been possible. We quantified 140 metabolites including amino acids, biogenic amines, acylcarnitines, (lyso-)phosphatidylcholines, sphingomyelins, and hexoses in 20 T1DM and 20 age-, sex- and BMI-matched non-diabetic participants, under fasting conditions and 4-hours after a mixed meal. Statistically significantly differences were observed in 36 metabolites, 18(50%) in the phosphatidylcholine and lysophosphatidylcholine class. As examples, phosphatidylcholine concentrations were decreased and lysophosphatidylcholine concentrations greater in subjects with T1DM (see Table).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Non-diabetic (fasting) | T1DM (fasting) | Non-diabetic (post-prandial) | T1DM  (post-prandial) |
| Phosphatidylcholine (PC.aa.C38.3) (uM) | 35.62 | 27.02\*\* | 36.42 | 27.37\*\* |
| Lysophosphatidylcholine (lysoPC.a.C18.0) (uM) | 13.18 | 16.73\* | 12.14 | 14.60\* ♯ |

*Data presented as mean concentration. \*p <0.005 vs. non-diabetic; \*\*p <0.001 vs. non-diabetic; ♯p <0.005 vs. fasting.*

Lipidomics enables identification of abnormal metabolic pathways in T1DM. One example is lysophosphatidylcholine which we have demonstrated to be increased in T1DM, and which has recently been demonstrated to associate with endothelial dysfunction and atherosclerotic plaques. Targeted studies are now warranted to explore this further.

**OC6. The HDL proteome as a novel indicator of metabolic health in obesity - the metabolic hdl index score (MHI)**

*W Guo\*1,2, Y Lenighan\*2, E Dillon2, S Curley1,2, M O’Reilly1,2, A Mat3, J Gibney4, A Hogan3, S Pennington2, H Roche1,2, D O’Shea3 F McGillicuddy1,2.*

UCD Diabetes Complications Research Centre1, UCD Conway Institute, University College Dublin, Dublin 42; Department of Endocrinology at St Vincent's University Hospital, Dublin 43, Tallaght Hospital, Dublin 24, Ireland4.

*Background:*Over 100 proteins associate with circulating HDL particles. We previously demonstrated enrichment of pro-inflammatory proteins on HDL from obese mice fed a saturated-fat diet compared to monounsaturated-fat diet. The current study hypothesized that HDL function and proteomic composition would be similarly modulated in human obesity.*Methods:* Obese (n=108) and normal weight (NW) subjects (n=129) were recruited by St. Vincent’s University Hospital and Tallaght Hospital. Obese subjects were categorized by NCEP-ATP III guidelines into metabolically healthy obese (MHO, n=45) or metabolically unhealthy (MUO, n=65) obese. Efflux function of small (ABCA1-dependent) and large (ABCA1-independent) HDL particles and paraoxonase-1 (PON1) activity was determined. HDL-proteomic analysis was performed on a sub-group of age- and sex-matched subjects (n=8-12 per group). *Results:*ABCA1-independent (p<0.001) efflux to HDL and PON1 activity (p<0.001) weresignificantly reduced, while ABCA1-dependent efflux was preserved, in obese individuals compared to NW controls. The HDL proteome wassignificantly modulated in MUO subjects relative to NW (49/146 proteins significantlydifferent). Significant reductions in ApoA-I, ApoA-IV and PON1 and increases in complementproteins and acute phase proteins were evident on MUO-HDL compared to NW-HDL. The MHOgroup exhibited an intermediate HDL-proteome footprint. A metabolic HDL index (MHI) score was generated from the proteomic data could significantly delineate between the MHO and MUO groups and was one of thestrongest correlates with multiple components of the metabolic syndrome.*Conclusions:*HDL particles undergo metabolic activation during obesity and become dysfunctional. Determination of MHI may provide a novel indicator of metabolic health and guide clinical decision making.

**OC7. A randomized controlled trial of transcutaneous electrical nerve stimulation of T6 for appetite control in obese subjects on a low-calorie diet.**

*Hutchinson K1, Shah W2, Chaney S2, Sreenan S3, Cormican LJ2, Burke CM2 ,Carlson O4, Egan JM4, Faul JL2.*

Eurofins, Sandyford, Dublin 18, Ireland1, Asthma Research Centre, Connolly Hospital Blanchardstown, Dublin 15, Ireland2, Department of Endocrinology, Connolly Hospital Blanchardstown, Dublin 15, Ireland3, National Institute on Aging, National Institutes of Health, Baltimore, MD 21224, USA4.

Obese patients commonly fail a prescribed low calorie diet because they feel hunger. TENS (transcutaneous electrical nerve stimulation) is a widely used non-pharmacologic treatment for discomfort associated with knee arthroplasty. Since some afferent pain fibers pass from the stomach through the spinal root T6, we hypothesized that TENS applied to dermatome T6 might alleviate abdominal discomfort accompanying a low calorie diet. We performed a randomized controlled study of TENS to improve dietary control in obese subjects (BMI > 30 kg/m2) on a 1,200 kcal diet. Subjects randomized to Group I (controls) were prescribed this diet. Group II subjects were prescribed the same diet, but also received TENS of dermatome T6 for 20 minutes twice a week for 6 weeks. After 6 weeks, compared to controls (*n*=8), Group II (*n*=10) had improved adherence to the diet plan (-1 (1.1) *vs* 0.1 (0.9), *p < 0.05*); felt less hunger (-1.0 (1.1) *vs* 0.2 (1.3), *p < 0.05*); had greater weight loss (- 7.7 (3.9) *vs* 1.7 (6.1) kg, *p < 0.01*) ; a greater reduction (-0.6 (0.8) *vs* 0.4 (0.6) *mmol/L*, *p = 0.01*),(-1.5 (1.6) *vs* 0.4 (1.2) ng/ml*, p < 0.05)*in total cholesterol and C-peptiderespectively. There was no significant difference in serum measures of Leptin, Adiponectin, Ghrelin, FGF-19, FGF-21, CRP, glucose, cortisol, or vitamin D. TENS appears to improve dietary control by alleviating hunger during a low calorie diet; TENS-using subjects can achieve meaningful weight loss, and a lowering of cholesterol, associated with significantly lower C-peptide.

**OC8.The effects of acute hyponatraemia on bone remodelling markers in patients with subarachnoid haemorrhage.**

*A Garrahy1, I Galloway1, AM Hannon1, R Dineen1, M Javadpour2, WT Tormey3, MJ Mc Kenna4, PJ Twomey5, M Kilbane5, M Sherlock1, RK Crowley4, CJ Thompson1*

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Animal data and cross-sectional human studies have established that chronic hyponatraemia predisposes to osteoporosis; the effects of acute hyponatraemia on bone remodelling are unknown. Serum markers of bone remodelling (total procollagen type 1 amino-terminal propeptide (P1NP), bone specific alkaline phosphatase (bone ALP), N-mid-osteocalcin (OCI) and C-terminal teleopeptides of type I collagen (CTX-1)) were assessed in a cohort of patients admitted with subarachnoid haemorrhage (SAH), who were prospectively studied over seven days. Thirteen patients (8 women), median age 52 (36-81) years were recruited. Patients who developed post-SAH ACTH deficiency were excluded. Five patients developed acute hyponatraemia, median nadir pNa 131(127–132)mmol/L, and 8 remained eunatremic, nadir pNa 135 (133–139)mmol/L. The groups were matched for age, 25OHD, PTH, WFSS and Fischer scores. AUC serum cortisol concentration was greater in the hyponatraemic group, 1210(905-1692)nmol/L, than the eunatremic group, 900(691-1196)nmol/L, p=0.02. Median change in P1NP and bone ALP was -1.3(-19.4–6)ug/L and -1.86(-8.7–1.3)ug/L in hyponatraemic patients compared with +7.1(-2–25)ug/L and +1.1(-1-5.6)ug/L in eunatremic patients (p=0.02 and 0.03). There was no significant difference between change in OCI or CTX-1 between the groups. Changes in P1NP, OCI and ALP all correlated positively with nadir pNa: r=0.75,p=0.004; r=0.58,p=0.04; r=0.68,p=0.01. There was no correlation between nadir pNa and change in CTX-1. AUC serum cortisol was strongly negatively correlated with nadir pNa (r=-0.89,p=0.0002). Hyponatraemia following SAH is associated with suppression of bone formation markers, which may occur secondary to hypercortisolaemia. Further analysis with larger numbers will help us determine whether hyponatraemia is an independent risk factor.

**OC9. Measuring 25-Hydroxyvitamin D levels early during pregnancy: a randomised clinical trial**

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High-dose vitamin D monotherapy can decrease fasting plasma glucose levels during pregnancy. We hypothesized that identification of hypovitaminosis D, and its treatment using physiological doses of vitamin D and calcium, decreases hyperglycaemia in pregnant women.Pregnant women were allocated randomly to have a serum 25-hydroxyvitamin D level (25OHD) measured at ~12 weeks gestation (Group 1) or not (Group 2). Those with a 25OHD less than 50 nmol/L received 400 units of cholecalciferol with 600 mg of calcium twice daily. The primary outcome measure was the change in maternal blood glycosylated haemoglobin level (HbA1c) between 12 and 36 weeks. We recruited 303 women aged 31.2±4.9 years with a BMI of 26.6±5.8kg/m2. 86 (56.2%) of those in Group 1 (n=153) had a 25OHD less than 50 nmol/L. The change in HbA1c did not differ between the two groups (1.40±2.63 vs 1.29±2.55 nmol/mol, p=0.732). 25 women in group 1 (16.7%) experienced a greater than 3 mmol/mol increase in HbA1c in group 1 compared to 19 (12.7%) Group 2 (p=0.394). Gestational diabetes was diagnosed in 17.7% (n=23) of group 1 and 16.7% (n=23) of group 2 (p=0.690). Miscarriage before 28 weeks of gestation occurred in 0.7% (n=1) of Group 1 and in 4.0% (n=6) of Group 2 (p=0.059). We found no association between checking 25OHD levels during pregnancy with change in glucose levels. We had 11% power to see a difference in our primary outcome measure. The trend toward a difference in miscarriage rates requires further investigation.

**OC10. Hyponatraemia in older patients is often untreated, despite greater mortality burden; results of a prospective cohort study.**

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Background: Hyponatraemia is associated with increased morbidity and mortality, and is commoner in elderly patients. The aetiology and outcomes of hyponatraemia in the elderly has not been defined in prospective studies. Methods: A single-centre 9 month prospective observational study of hyponatraemic (HN) patients (130 mmol/L) was performed. Clinical outcomes in patients ≥65 years (EP) and those <65 years (YP) were analysed, and compared with age-matched eunatremic controls, using the Graphpad-Prism 7 statspack. Results: 1321 consecutive admissions with hyponatraemia (67% EP, median age 77 (65-98) years) and 1122 YP (63% EP, median age 77 (65-99) years) were analysed. Median nadir plasma sodium was similar in both groups with HN, 128(107-130) mmol/L EP vs 128(110-130) mmol/L YP (p=0.62). EP HN patients were more likely to have hypovolaemic HN (34%) compared with YP (28%, p=0.03). Diuretic-induced HN was twice as common in EP (8%) compared with YP( 4%, p=0.01). Malignancy-induced SIAD occurred with similar frequency in both groups (7% in EP vs 8% in YP, p=0.65). Respiratory disease was causative in 10% cases of EP SIAD, compared with 4% in YP SIAD, p=0.0004. HN was corrected in 53% of EP, compared with 64% of YP, p=0.0001. Length of stay and re-admissions rates were similar across HN age groups. EP with HN were 2.4 times more likely to die in hospital, compared with eunatremic age-matched controls, p<0.0001. Conclusions: The causation of HN is different in EP. Hyponatraemia in EP is often uncorrected, despite increased mortality compared with eunatremic age-matched controls.

**OC11. Modified-release hydrocortisone improves cardiovascular risk profile in patients with primary and secondary adrenal insufficiency**

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Introduction: Adrenal insufficiency (AI) is associated with increased cardiovascular morbidity and mortality. Modified-release hydrocortisone (MR-HC, Plenadren®) differs from conventional hydrocortisone (HC), as once daily administration more closely mimics physiological circadian cortisol rhythm. Objective: To evaluate the effects of modified-release hydrocortisone, Plenadren®, on the cardiometabolic profile of patients with AI. Study Design and Methods: An investigator- initiated, prospective, cross-over study in patients with adrenal insufficiency [primary (PAI) and secondary (SAI)], who had been stable on conventional HC for > 3 months. Patients switched from their usual HC to a once daily dose equivalent of MR-HC. Following 12 weeks of therapy, they presented for clinical assessment and investigations. Results: Thirty-six patients(18 PAI/18 SAI) completed the study. Mean age was 44.6 years(SD±13), and 58%(n=21) were male. After 3 months on MR-HC the mean systolic blood pressure decreased by -4.5mmHg, p=0.04 and diastolic blood pressure decreased by -4.2mmHg,p=0.01.There was also a significant reduction in mean weight (difference= -1.17kg, p=0.03) and BMI (difference=-0.3kg/m2, p=0.03) after 3 months. There was no change in mean LDL (p=0.4), HbA1c or fasting glucose following 3 months MR-HC therapy. In sub-analysis, a greater reduction in SBP was observed in the SAI verses the PAI cohort post MR-HC therapy (-5.8mmhg vs -4 mmHg, p=0.01). Conclusion: Modified-release HC decreases blood pressure, weight and BMI compared with conventional HC treatment. A greater reduction in SBP was observed in those patients with SAI which has important implications, as this cohort have well documented excess cardiovascular mortality.

**OC12. Fat mass is positively associated with hunger and energy intake at extremes of obesity**

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Fat mass (FM) has been shown to be negatively associated with energy intake (EI) in lean individuals (potentially due to its production of leptin) but in overweight and Class I obese individuals this negative association is lost. Fat free mass (FFM) due to its influence on resting and activity energy expenditure is positively associated with EI in lean, overweight and Class I obese individuals. To date, the relationships between FFM, FM, hunger and EI have not been investigated in patients with a body mass index (BMI) > 35kg/m2. The aim of the present study was to examine the associations between FFM, FM, hunger and EI in individuals with severe (BMI > 35kg/m2) obesity. In total, 43 subjects (52% male) with a mean (±standard deviation) BMI of 44.5±6.2kg/m2 were recruited for this cross-sectional analysis. Dual energy x-ray absorptiometry and an ad libitum food buffet were used to measure body composition and EI respectively, and hunger was measured using a visual analogue scale (0-100mm). When these data were analysed, both FM and FFM positively correlated with both EI (rs= 0.31, p= 0.02; r= 0.34, p= 0.01, respectively) and hunger (rs= 0.33, p= 0.02; r= 0.31, p= 0.03, respectively). These findings indicate that in extremes of obesity FM positively correlates with hunger and EI (in direct contrast to its observed relationships in lean individuals) and raises the possibility that FM may function, in a direct or indirect fashion, as a promoter of hunger and EI in this cohort, further exacerbating this disease state.

**OC13. The use of direct measures of behaviour to predict weight loss in patients with obesity**

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The use of direct measures of behaviour as predictive tools of weight loss may provide a personalised approach to optimise success. Our aim was to assess whether food intake from a buffet meal before and 4 months after the start of an intervention predicted weight loss. Patients with obesity were randomised 2:1 to receive liraglutide 3mg plus a lifestyle programme (LIRA n=35) or a standard lifestyle programme (STD n=14). All patients completed a standardised buffet meal where macronutrient breakdown along with caloric intake was assessed. At 4 months, patients in the LIRA group lost 12.8 ±9.2kg (P≤0.001) compared to patients in the STD group who lost 5.9 ± 8.1kg (P=0.06). The calorie intake from the buffet lunch meal reduced significantly in both groups at 4 months but the reduction was more prominent in the LIRA group (296kcal, p=0.002 vs 169kcal, p=0.02). Food intake at baseline was significantly associated with percentage weight loss at 4 months in the STD group (R2= 0.669, P=0.007) but not in the LIRA group (R2= 0.005, P=0.67). There were no changes in the macronutrients selection between baseline and 4 months in both groups. It is possible to use total food intake assessed with a buffet meal as a direct measure of behaviour. The patients who consumed the highest number of calories pre intervention lost the most weight with a standard lifestyle treatment over 4 months and thus it may be used as a predictive tool. This was however not the case for liraglutide 3mg.

**OC14. Participation in a milk-based meal replacement programme is associated with increased fasting ketosis which is proportional to the degree of weight loss in adults with severe and complicated obesity.**

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Low calorie meal replacement programmes can induce significant short-term weight loss, with improvements in metabolic variables. Beta-hydroxybutyrate (βOHB) is the major ketone body produced in the liver due to the oxidation of fatty acids. There has been renewed recent interest in the role of therapeutic ketosis to improve health in patients with obesity. We sought to determine whether the degree of fasting ketosis was associated with the magnitude of weight loss in a milk-based meal replacement programme. We conducted a single centre, prospective cohort study in patients undergoing an eight-week milk-based dietary intervention. Anthropometric data along with fasting βOHB concentrations were measured at weeks 0,2,4,6 and 8. βOHB was quantified based on its oxidation to acetoacetate by the enzyme 3-hydroxybutyrate dehydrogenase and the concomitant reduction of NAD+ to NADH at an absorbance maximum of 340nm. Statistical analysis was performed using repeated measures ANOVA and linear regression in SPSS. In 27 (8 male, 8 T2DM) patients aged 48.5±13.4 years who completed the eight week intervention, mean BMI decreased from 50.5±7.9 to 45.5±7.5 kg/m-2, with a mean weight loss of 14.1±4.3kg. Fasting plasma ketones increased from 153±147 to 431.1±595 µmol/L and the magnitude of the weight loss was associated with the change in fasting ketosis at eight weeks (ß=48.2 [14.3, 82.1], p=0.007) in unadjusted and adjusted analyses.In patients with severe and complicated obesity who completed an eight-week milk-based meal replacement programme, the magnitude of the change in fasting ketosis was proportional to the weight lost.

**OC15. Specificity and signalling of GPR120 agonists using CRISPR/Cas9 gene editing**

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Long chain fatty acid (LCFA) sensing GPR120 is a novel anti-diabetic target which enhances beta cell function and insulin secretion. The specificity of many LCFA agonists acting through GPR120 remains elusive. The metabolic functionality and specificity of GPR120 agonists was determined in beta cells using innovative CRISPR Cas9 gene editing. GPR120 knockout cells were developed from clonal pancreatic beta cell line BRIN-BD11 cells using CRISPR Cas9 gene editing. Insulin stimulatory effects and specificity of GPR120 agonists were assessed in wild-type and GPR120 knockout BRIN-BD11 cells by radioimmunoassay and immunocytochemistry. Receptor gene expression and intracellular [Ca2+]i were determined in both cell types. Endogenous (alpha-linolenic acid (ALA)) and synthetic (GSK 137647) GPR120 agonists stimulated insulin secretion at 5.6 mM glucose (p<0.05-0.001, 10-11M - 10-4M) and 16.7mM glucose (p<0.05-0.001, 10-12M-10-4M) in wild type BRIN-BD11 cells, with no cytotoxicity effects. At all physiological concentrations, the insulinotropic effect of ALA and GSK137647 were abolished in GPR120 knockout BRIN-BD11 cells at both 5.6 mM and 16.7mM glucose. GPR120 was co-localised with insulin in islets of wild-type pancreatic BRIN-BD11 cells lines as demonstrated by immunocytochemistry. GPR120 protein expression was absent in the knockout cell line. GPR120 gene expression was abolished in GPR120 knockout cells (p<0.01). Free fatty acid receptors GPR43, GPR40 and GPR84, bearing similarity to GPR120, were assessed in both wild type and GPR120 knockout cells. GPR40 (p<0.001), GPR43 (p<0.05) and GPR84 (p<0.001) receptors exhibited increased mRNA expression in the absence of GPR120 receptor in knockout cells, compared to respective wild type cells. GPR120 deletion abolished release of intracellular [Ca2+]i upon treatment with ALA and GSK 137647 at 10-4M. ALA and GSK 137647 exhibit significant specificity to GPR120 and demonstrates the importance of GPR120 agonists as novel anti-diabetic agents.

**OC16. Apelin-13 analogues were as effective as incretin mimetics in treating streptozotocin induced diabetic mice**

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We have previously shown promising *in vivo* antidiabetic benefits of apelin-13 peptide analogues in diet-induced obese (DIO) and diabetic *db/db* mice. Here the efficacy of (pGlu)apelin-13-amide and its acylated analogue (pGlu)(Lys8GluPAL)apelin-13-amide, were compared with exendin-4 and liraglutide, following chronic (21-day) administration to streptozotocin-induced (STZ) diabetic mice. Five groups of male NIH-Swiss mice (n=8) received STZ to induce hyperglycaemia (20±2 mM blood glucose). Mice were then given twice daily (09:00 and 17:00 h) i.p. injections of saline vehicle, (pGlu)apelin-13-amide, (pGlu)(Lys8GluPAL)apelin-13-amide, exendin-4(1-39) or liraglutide (25 nmol/kg bodyweight) for 21 days. Control NIH-Swiss mice received twice daily saline injections. No changes in bodyweight or food intake were observed with any peptide treatments. Apelin analogues and incretin mimetics showed sustained improved glycaemic control (p<0.05 to p<0.001, from day 6 to 21) and reduced non-fasting circulating insulin versus saline-treated control mice. Exendin-4 improved glucose tolerance (ipGTT) in STZ-induced diabetic mice (p<0.05) versus STZ-induced saline-treated controls. After 21 days, both apelin analogues and incretin mimetics showed reduced LDL-cholesterol and elevated HDL-cholesterol (p<0.05 to p<0.001) in STZ-induced diabetic mice versus saline-treated controls. Apelin analogues and incretin treatments failed to significantly reduce HbA1c after 21 days. All STZ-induced diabetic mice showed a reduced terminal % body fat mass and increased % lean mass compared to lean controls, following terminal DEXA analysis. Total pancreatic insulin content was significantly reduced (55-62%, p<0.001) in all STZ-induced diabetic mice regardless of treatment. In conclusion, longer-term administration of apelin-13 analogues was as effective as incretin mimetics in counteracting diabetes in STZ-induced diabetic mice.

**OC17. Hyperglycemic disruption of blood-retinal barrier phenotype in human retinal microvascular endothelial cells is mitigated with COMP-ANG1 treatment**

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Diabetic retinopathy is the leading global cause of blindness in working individuals. Current treatments for diabetic retinopathy have considerable limitations, underpinning the need for new therapeutic options. This study examines the vasonormalisation and neuroprotective properties of COMP-Ang1 in a hyperglycemic human retinal endothelial cell model. Confluent human retinal microvascular endothelial cells were treated (0-72hrs) with D-Glucose (5 or 30mM) in the absence and presence of COMP-Ang1 (10-200ng/ml). L-Glucose (30mM) was employed as an osmotic control. Post-treatment, intact cell monolayers were monitored for permeability to fluorescein isothiocyanate-dextran 40kDa. Cells were also harvested for analysis of inter-endothelial junction proteins by quantitative reverse transcription polymerase chain reaction and Western blotting. The impact of receptor tyrosine kinase Tie2 gene silencing on COMP-Ang1 efficacy was also evaluated. Treatment with 30mM D-Glucose (but not L-Glucose) demonstrated a time-dependent elevation in the mean rate of fluorescein isothiocyanate dextran diffusion across intact cell monolayers, in parallel with significant reductions in messenger ribonucleic acid/protein levels of occludin, claudin-5, zonula occludens-1, and vascular endothelium cadherin. These effects were all attenuated by COMP-Ang1 in a concentration-dependent fashion, with 200ng/ml recovering barrier function by ~88%, and recovering reduced inter-endothelial junction levels by over 50%. Finally, Tie2 knockdown blocked the ability of COMP-Ang1 to mitigate against hyperglycemia-induced permeabilisation of retinal endothelial cells and depletion of junctional expression levels. In summary, this study presents a comprehensive in vitro cell model that quantifies the concentration-dependent efficacy of COMP-Ang1 to mitigate the injurious effects of hyperglycemic challenge on retinal endothelial cell properties via Tie2-mediated signalling.

**OC18. GCD59 as an early biomarker for GDM**

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Plasma glycated CD59 (pGCD59) is an emerging diabetes biomarker. In a US population it had high sensitivity and specificity for GDM diagnosis at weeks 24-28 using 2-step screening with Carpenter & Coustan criteria. The aim of this study was to assess pGCD59 as a predictor of early GDM. pGCD59 was measured in 814 samples from women undergoing a 1-step OGTT (75gr-2hr; WHO 2013 criteria) <20 weeks gestation in the DALI study, a European trial of women at high risk of GDM. Of the 814 plasma samples analysed, 693 were selected for this study including 486 samples from women who had normal glucose tolerance (Controls) and 207 from women that met IADPSG criteria for GDM <20 weeks (Cases). Age, race/ethnicity, BMI were similar among Cases and Controls. Maternal pGCD59 levels strongly predicted the OGTT diagnosis of GDM <20 weeks, as evidenced by a cross-validated unadjusted AUC ROC of 0.84(95% CI: 0.81, 0.87) and an adjusted (maternal age, BMI, ethnicity) AUC ROC of 0.86(95% CI: 0.83, 0.90. In contrast, HbA1C did not predict early GDM (<20 weeks) even after adjustment for maternal age, BMI, ethnicity, as indicated by AUC ROC of 0.54 (95% CI: 0.49, 0.58). One standard peptide unit (SPU) increase in maternal pGCD59 level was associated with 30% increased odds of delivering an LGA infant (odds ratio (OR): 1.3; 95% CI: 1.0, 1.6; p-value 0.05). These results indicate that pGCD59 is a potential biomarker for early detection of GDM and for risk assessment of delivery of an LGA infant.

**OC19. Angiogenic factors and fetal growth in women with Type 1 Diabetes: A sub-analysis of the CONCEPTT trial**

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Background: Maternal hyperglycaemia alone does not explain the incidence of large for gestational age offspring (LGA) amongst women with T1DM. Placental vascular development is regulated by angiogenic factors. Placental growth factor (PIGF) is one such factor with a PlGF >100pg/ml signifying a well-developed placenta. Our aim was to determine if markers of placental function and glycemic control can explain variations in birthweight in women with T1DM .Methods: Amongst 157 women who participated in CONCEPTT (an RCT comparing CGMS to SMBG in pregnancy); PlGF and glycemic control (HbA1c < or >6.5%, time in range on CGMS) at randomisation, 24 and 34 weeks ‘gestation were assessed. Linear regression models were used to test for a differential effect of placental function on mean birth weight in those with different levels of glycemic control. Results: No significant relationship was found between birthweight and markers of placental function and glycemic control at randomisation or at 24 weeks’ gestation.At 34 weeks, the relationship of birth weight to PlGF differed depending upon HbA1c.Where HbA1c <6.5%, birthweights were similar (3635±556 g and 3604±602 g) with low and high PlGF. Where HbA1c>6.5%, an elevated PlGF (>100pg/ml) resulted in higher birth weight than in those with lower PlGF (3822g ±679 vs 3344g ±556). Conclusion: In women with T1DM, the combination of a healthy placenta with poor glycemic control resulted in the highest birthweights. Tighter glycemic control to avoid LGA is needed in women with healthy placental function.

**OC20. Identification of a diagnostic and prognostic miRNA signature in women with Gestational Diabetes Mellitus**

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Gestational Diabetes Mellitus (GDM) is characterised by insulin resistance accompanied by reduced beta-cell compensation to increased insulin demand, typically observed in the second and third trimester and associated with adverse pregnancy outcomes. There is a need for a biomarker that can accurately diagnose GDM, predict onset and accurately monitor status, reducing foetal-maternal morbidity and mortality risks. To this end, circulating microRNAs (miRNAs) present themselves as promising candidates, stably expressed in serum and known to play crucial roles in regulation of glucose metabolism. We analysed circulating miRNA profiles in a cohort of GDM patients (*n*=31) and nondiabetic controls (*n*=29) during the third trimester for miRNA associated with insulin-secretory defects and glucose homeostasis. We identified miR-330-3p as being significantly upregulated in GDM compared to nondiabetic controls. Furthermore, increased levels of miR-330-3p were associated with better response to treatment (diet vs. insulin), with lower levels associated with exogenous insulin requirement. We observed miR-330-3p to be significantly related to the percentage of caesarean deliveries, with miR-330-3p expression significantly higher in spontaneously delivered GDM patients. These results suggest miR-330-3p may help direct personalized therapy in GDM, predict diabetic outcome and/or severity and progression, and further discriminate the diagnostic criteria employed in GDM diagnosis during pregnancy.

**OC21. Preliminary *in vitro* and *in vivo* evidence for the antidiabetic potential of blue whiting protein hydrolysates.**

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The prevalence of type 2 diabetes mellitus is increasing globally, and alternative strategies need to be examined to help curb its rise. High quality dietary protein was previously shown to improve postprandial glycaemic control. Novel protein sources derived from low-value fish bycatch, such as blue whiting have potential as a functional food ingredient. Here we assessed the relevant antidiabetic bioactivities from blue whiting protein hydrolysates (BWPH) using *in vitro* and *in vivo* approaches. Hydrolysates were produced by additional hydrolysis of commercially available BWPH using Flavourzyme® 500L and Alcalase® CLEA and further fractionated using solid phase extraction (SPE, C-18 Sep-Pak). Various *in vitro* screening of BWPH was performed including insulin secretion from pancreatic BRIN-BD11 cells, GLP-1 secretion using GLUTag cells and DPP-4 inhibition using a fluorescent Gly-Pro-AMC assay. Acute *in vivo* feeding studies investigating plasma dipeptidylpeptidase-4 (DPP-4) activity were performed in fasting mice (n=6) administered BWPH by oral gavage (100 mg/kg). BWPH’s demonstrated a 5-fold increase in insulin secretion, compared to 5.6 mmol/l glucose control (p<0.001). BWPH’s also stimulated GLP-1 release from GLUTag cells by 2-fold (p<0.001), which was comparable with glutamine (10 mmol/l). BWPH caused a minimum of 60% DPP-4 inhibition *in vitro* and up to 35% inhibition 30 min after administration in mouse plasma. The 20% acetonitrile SPE fraction from the commercially generated hydrolysate and the Flavourzyme 500L hydrolysate exhibited the most potent *in vitro* DPP-4 inhibitory activity (p<0.01 versus control). In conclusion, BWPH’s represent a promising source of bioactive antidiabetic peptides, but further research is required to identify the primary sequence of bioactive peptides within these fish hydrolysates

**OC22. Linking Diabetes and Dementia Risk: A Role for Aβ-42 induced activation of the NLRP3 Inflammasome? Results from the ENBIND Study**

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Midlife Type 2 Diabetes (T2DM) is associated with a greater risk of dementia in later life. The innate immune NLRP3 inflammasome has been implicated in both T2DM and Alzheimer’s Dementia (AD) and can become activated by Amyloid-β 42 (Aβ-42), the putative pathogenic protein in AD. Peripheral Blood Mononuclear Cells (PBMCs) of otherwise healthy patients with T2DM (N = 30, 52±8 yrs) and matched controls (N = 15, 52.5±7.86 yrs), were incubated for 18h with LPS & Aβ42. Cell supernatants were analysed for production of the inflammasome-dependent cytokine IL-1β. Cognitive function was assessed using the Montreal Cognitive Assessment (MoCA) and gait speed assessed under self-selected, fast and dual-cognitive task conditions (which has been shown to correlate with future risk of cognitive decline). Overall, there were no statistically significant between-group differences in IL-1β production and MoCA score did not correlate with IL-1β production by PBMCs. However, poorer performance on the dual-cognitive gait task was associated with significantly greater IL-1β production in response to LPS & Aβ42 in those with T2DM (p=0.015), which strengthened after robust control for demographic, cognitive and cardiovascular covariates (p=0.003). The same association was not seen for healthy controls (p=0.58). Thus, the current study found that poorer performance on a dual-cognitive gait task was associated with significantly greater IL-1β production in response to LPS & Aβ42 in midlife T2DM. Given the value of dual task gait in predicting cognitive decline, longitudinal follow up of this cohort may provide insight into the underlying links and potential biomarkers of dementia risk in T2DM.

**Poster Presentations**

**P1**  **Exercise and activities undertaken by children with Type 1 Diabetes mellitus (T1DM)**

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Aims: A physically active lifestyle helps manage diabetes by improving cardiovascular fitness, increasing insulin sensitivity, improving school performance, and enhancing quality of life. However, despite efforts to promote active lifestyles, a significant proportion of children with T1DM remain inactive. The aim of this study was to examine exercise and activities undertaken by young people with T1DM. Methods: The study was a regional level observational clinical trial within the University Hospital Limerick T1DM outpatient clinic, focusing on self-reporting of activity using the Children’s sport participation and physical activity(CSPPA) questionnaire. Questionnaires were completed and analyzed using SPSS statistical software. Results: 55 children completed the survey. 55% of respondents were female and age range was from 5 – 17 years, with all respondents being diagnosed a minimum of 2-years previously. 83% of respondents watched television with one-third watching daily. 57% of respondents used computers daily. 20% of respondents used a mobile phone. 83% of respondents travelled to school by car or bus with two-thirds living within 5k of school. The most common reason for using a car or bus was road safety reasons with only 4% stating becoming hypoglycaemic was an issue. Conclusion: The results from this study show variable levels of activity amongst children with T1DM. The majority watching television on a daily basis while most were transported to school on the basis of road safety. Future work in this area should be to further promote undertaking activity, including the provision of schemes to help promote activities such as walking or cycling to school.

**P2 Barriers to participating in physical activity and exercise in children with Type 1 Diabetes Mellitus (T1DM)**

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Aims: Exercise and physical activity is an important component of a healthy lifestyle in all individuals with T1DM. However, despite efforts to promote an active lifestyle, a significant proportion of children with diabetes remain inactive and do not reach the recommended guidelines for exercise and physical activity. The aim of the current study was to examine barriers to undertaking physical activity in young people with T1DM. Methods: The study was a regional level observational clinical study within the University Hospital Limerick T1DM outpatient clinic, focusing on the perceived barriers to exercise and physical activity using the modified Barriers to physical activity in patient with Diabetes type 1 (BAPAD1) questionnaire. Results: 55 children completed the survey. The respondents been diagnosed a minimum of 2 years previously. 5% of respondents felt that having diabetes was a barrier to undertaking physical activity. Half of respondents stated that the risk of hypoglycaemia would very likely be a barrier to undertaking physical activity. 29% of respondents said that loss of control of their diabetes was not a barrier to undertaking physical activity. About 30% of respondents felt that the risk of hyperglycaemia was a barrier to undertaking physical activity. Conclusion: The results from this study show that a high proportion of children felt that having T1DM was not a barrier to physical activity. The risk of hypoglycaemia was a significant barrier to activity. Future work should focus on addressing these barriers in more detail and the creation of guidance documents regarding overcoming such barriers.

**P3 Insulin autoimmune syndrome with spontaneous remission**

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Confirmed insulin autoimmune syndrome (IAS) is a rare diagnosis. Here we present the case of a patient with a confirmed diagnosis of IAS and spontaneous remission.

A 65 year-old female presented with recurrent episodes of syncope. Past history was remarkable for liver injury secondary to nitrofurantoin six months prior. A laboratory glucose measured during an episode confirmed hypoglycaemia of 1.3 mmol/L. Further testing demonstrated elevated plasma insulin and C-peptide, and an elevated insulin/c-peptide ratio (see table 1). Treatment with diazoxide was commenced, with little response to 200mg/day. Insulin antibodies were strongly positive at 27 mg/L (0-5). Serial testing of insulin and c-peptide showed decreasing values over weeks. A diagnosis of IAS with spontaneous remission was made. Diazoxide was withdrawn, with maintenance of normoglycaemia.

This case highlights the importance of estimating insulin/c-peptide molar ratios and antibody levels in patients with proven hyperinsulinaemic hypoglycaemia to detect IAS.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Day | Lab glucose  (Ref 3.9-7.9 mmol/L) | C-peptide  (Ref 340-1800 pmol/L) | Insulin  (Ref 12-150 pmol/L) | Insulin/c-peptide molar ratio |
| 7 | 2.9 | 6310 | 65600 (dilution) | 10 |
| 13 | 3.0 | 2090 | >6000 | N/A |
| 33 | 3.7 | 1590 | 3770 | 2.4 |
| 54 | 6.7 | 1870 | 807 | 0.4 |

Table 1. Insulin, c-peptide and molar ratios from day of presentation

**P4 Changes in Alanine Aminotransferase (ALT) in Adults with Severe and Complicated Obesity During a Milk-Based Meal Replacement Programme.**

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Excess adiposity is associated with fat accumulation within the liver, and non-alcoholic steatohepatitis (NASH) is highly prevalent in bariatric patients. Elevated alanine aminotransferase (ALT) is a marker of NASH. We sought to determine the influence of a milk-based meal replacement programme on ALT levels in adults with severe and complicated obesitWe conducted a retrospective cohort study of completers of a 24-week meal replacement programme, including an eight week weight loss phase followed by weight stabilisation and maintenance phases. ALT was quantitated using the Roche Cobas® 8000 enzymatic assay with spectrophotometric detection. The decrease in absorbance at 340nm is directly proportional to the concentration of ALT. Inter-assay precision at a mean ALT concentration of 28U/L,121U/L and 210U/L was 5.4%, 1.6% and 2% respectively. We examined changes over time in ALT using paired t test and repeated measures one way ANOVA.In 105 patients(56 female)aged 55±11 years, there was an unexpected and statistically significant increase in ALT from 36±25.5 at baseline to 47.3±30.8 (p<0.001), 44.9±25.3, (p<0.001), 44.1±31.3(p=0.01) and 37.4±20.9(p=0.51) at 2, 4, 6 and 8 weeks respectively. Then, ALT decreased at weeks 16 and 24 to 28.5±13.4 (p<0.001) and 24.8±13.2(P<0.001). Body weight decreased from 144±27.6 to 121.1±25.1 kg (p<0.001) after 24 weeks. In adults with severe and complicated obesity undergoing a milk-based meal replacement programme, there was an initial unanticipated rise in ALT over eight weeks, followed by an overall reduction by 24 weeks. The extent to which liver fat accumulation fluctuates with weight loss interventions warrants further study.

**P5** **Aldosterone/ renin ratio measured using liquid-chromatography-tandem-mass-spectrometry (LC-MS/MS) is increased and associated with blood pressure levels in unselected African-origin compared to matched European-origin participants**

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Hypertension is common and often associated with low renin levels in African-origin(AO) people. The aldosterone/renin-ratio(ARR) is the screening test for primary hyperaldosteronism(PHA), which accounts for up to 10% of hypertension. Using radioimmunoassay, we have recently demonstrated abnormal ARR in 45% of AO compared to 25% of European-origin(EO) patients screened for PHA. Those findings, however, are potentially explained by selection bias and should be verified using the gold-standard technique of liquid-chromatography-tandem-mass-spectrometry(LC-MS/MS). We have therefore carried out a cross-sectional comparison of 61(37 male) matched pairs of unselected AO(41±11 yrs, BMI 30±4kg/m2) and EO(age 40±9 yrs, BMI 31±6 kg/m2) participants. Plasma aldosterone concentration(PAC) and plasma renin activity(PRA) were measured using LC-MS/MS. ARR>750 pmol/l/ng/ml/hr was deemed abnormal. 13 AO and 10 EO participants had previously diagnosed hypertension. Systolic (135±20 vs 124±12mmHg) and diastolic (83±12 vs 77±8 mmHg) BP were greater in AO participants. PRA was lower (0.81±0.82 vs 2.16±3.23 ng/ ml/ hr) and ARR (432±216 vs 369±262 pmol/ l /ng/ ml/ hr) greater in AO subjects (P<0.05); PAC did not differ between groups. 11(18%) AO and 3(5%) EO participants had abnormal ARR. ARR(P<0.05), but not PAC or PRA, correlated with systolic (r=0.23) and diastolic (r=0.34) BP. Using LC-MS/MS, we have confirmed that ARR is greater in unselected AO compared to EO participants, and is primarily explained by low PRA. It is not known whether this reflects physiologic or pathologic differences, but the consequence is that a greater proportion of AO participants “fail” the ARR and potentially undergo unnecessary investigation and treatment.

**P6**  **High HDL-cholesterol levels in Type 1 diabetes are not associated with commensurately increased cholesterol efflux capacity**

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Atherosclerosis risk is increased in type-1-diabetes(T1DM), despite typically normal-to-high HDL-cholesterol(HDL-C). Cholesterol-efflux-capacity(CEC; transporting cholesterol from the vessel wall to HDL particles and ultimately the liver for excretion) is an important atheroprotective function of HDL particles and a better predictor of cardiovascular events than HDL-C concentration. To determine whether high HDL-C levels are associated with commensurately high(protective) CEC, we compared HDL-particle number(nuclear-magnetic-resonance) and CEC(3H-cholesterol efflux from J774-macrophages to HDL) in 279 patients with T1DM(152 male; age-35±12(mean±SD)years; BMI-26±4kg/m-2) divided into tertiles of HDL-C. With increasing HDL-C concentration, CEC and HDL-particle number (expressed relative to HDL-C) decreased (see Table). The decrease in CEC was less marked when expressed relative to particle number.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | HDL-C (mmol/l) | CEC/ HDL-C | Particle number/  HDL-C | CEC/ Particle number |
| Low Tertile (n=93) | 1.18±0.16 | 11.73±2.89 | 23.9±6.49 | 0.53±0.23 |
| Middle Tertile (n=93) | 1.59±0.10a | 9.37±1.69a | 18.8±4.8a | 0.53±0.17 |
| High Tertile (n=93) | 2.23±0.32 a, b | 7.16±1.61 a, b | 16.4±4.0 a, b | 0.46±0.15 a, b |

*Mean±SD. a P<0.05 vs Tertile 1; b P<0.05 vs Tertile 2.*

Higher levels of HDL-C in T1DM are not associated with a commensurate increase in CEC. Estimates of particle number potentially provide a better indication of this important aspect of HDL function, which has implications for understanding cardiovascular risk in T1DM.

**P7 Diabetes and Obesity Screening in Patients with Rheumatoid Arthritis Attending the Rheumatology Clinic in Tallaght University Hospital During the Month of May 2019**

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Diabetes appears to be more common in rheumatoid arthritis (RA) patients with an incidence rate of 8.6 per 1000 person-years compared to 5.8 per 1000 person-years in non-rheumatic population. This risk is even higher in patients who receive corticosteroid therapy. The European League against Rheumatism (EULAR) recommends screening for cardiovascular (CV) risk factors at least once every five years for RA patients. People who are at higher risk of cardiovascular disease require assessment more frequently. Furthermore, obesity is a major risk factor that predisposes patients to both rheumatoid arthritis and cardiovascular disease and needs to be actively assessed and managed. This study evaluated the current practice of screening for CV risks in a random sample of fifty patients with RA attended the Rheumatology Clinic of Tallaght University Hospital during the month of May 2019. All data was collected retrospectively from the rheumatology electronic patient record (Cellma). The findings were compared with the EULAR standards. The majority of patients were females (66%) and about 82% were aged 50 or more. About two thirds (68%) of those patients were screened for diabetes during the last 5 years. Of the 34 patients who were screened, 9 patients had elevated HBA1C and or fasting blood glucose levels. The current practice tends to record patients’ weight only without the height measurement, which is required to calculate the body mass index (BMI). We recommend improvement in diabetes and obesity screening in RA patients at primary care level. All new patients now have BMI assessment.

**P8 Screening for diabetes with HbA1c in acute stroke patients in acute general hospital of Ireland. A re-Audit after implementation of Quality Improvement project.**

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Introduction: Diabetes enhances the chances of cerebrovascular accidents and cardio-embolic events. HbA1c plays a critical role in management of diabetes. In 2010, ADA adopted HbA1c as a preferred screening test for diabetes. An audit was conducted from 08/2016 to 09/2017 at St Luke’s hospital for screening of diabetes among non-diabetic acute stroke patients. Only 22% of non-diabetic patients admitted with stroke had HbA1c performed. HbA1c screening is now adopted for all acute stroke patients & a re-audit is performed.Objective: Objective of Re- Audit is to evaluate the compliance of HbA1c screening in all non-diabetic patients admitted with acute stroke.Standard: According to ASA & ADA, standard practise is to screen all patients presenting with stroke by testing FPG, OGTT & HbA1C. In inpatients setting, HbA1C supersede all other parameters because of FPG & OGTT results being effected by stress hyperglycaemia & stroke related complications (dysphagia) as well as day-to-day plasma glucose variations.Methodology: A prospective study of 113 non-diabetic acute stroke patients is performed after introduction of HBA1c screening from 01/2018 to 10/2018. Diabetics/pre-diabetics were excluded.Results:

Out of 113 admitted patients, 96 patients were tested for HbA1c showing 84 % compliance to screening. Out of 96 patients, 47 patients (49%) had normal HBA1c.27 patients (28 %) were pre diabetics with the remaining 22 patients (23 %) being diabetics.Conclusion:

HbA1c screening played an important role in timely diagnosis of diabetes in high risk stroke patients. This Project led to improvement in the quality of health care and implemented changes to practice to meet the international standards.

**P9 Adrenal involvement in MEN1 cases referred to the national centre for Neuroendocrine Tumours**

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Adrenal involvement in multiple endocrine neoplasia type 1 (MEN1) is reported in the literature with prevalence from 9-73%1. MEN1 is linked to a high risk of adrenocortical carcinoma, even in smaller lesions, and to adrenal hypersecretory syndromes. In this study, we screened 662 new neuroendocrine tumour cases referred to our centre since 2015; 36 cases were identified with MEN1 from 8 kindreds. 35 cases had confirmatory genetic testing. The age of these patients ranged from 17 to 74 years old, 17 were female. Of the 33 patients who had abdominal imaging, 11 were reported to have adrenal nodules (33%). Six patients had bilateral adrenal involvement (54.5%), eight more than 10 mm in size (72.7%). No patients have adrenal nodules more than 40 mm in size, and no case of adrenocortical carcinoma was identified. Three out of 11 patients with adrenal enlargement were found to have a hypersecretory adrenal syndrome (27.2%); one patient had androgen hypersecretion as a child and underwent adrenalectomy; one patient had hyperaldosteronism, and one patient had mild hypercortisolism. Eight patients with adrenal involvement had incomplete endocrine assessment. Hounsfield units were not reported in all cases. Adrenal involvement is common in our MEN1 cohort and consistent with what is reported in the literature. Structured follow-up for adrenal profile both endocrine and imaging is needed.

**P10** **A hidden cause of Ectopic ACTH Syndrome associated with Lung Carcinoid**

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Ectopic ACTH syndrome is a rare cause of Cushing’s syndrome, it accounts for 5-10% of endogenous hypercortisolaemia. We report a case of 58 years old male patient who had bilateral adrenalectomy and partial pituitary resection for Cushing’s syndrome in 1984. He has had adrenal insufficiency with persistently high ACTH since then. In 1991, he was found to have a mass in his lung and that was thought to be a vascular malformation. He presented with cough and wheezing and had a computed tomography of the thorax in May 2016 which showed an unchanged 6.5 centimetre mass at the left lower lobe of his lungs, and adenopathy involving precarinal, subcarinal and left hilar regions. A stenosis affecting distal left main bronchus was noted as well. He had an endobronchial debulking, which revealed a well differentiated neuroendocrine neoplasm/typical carcinoid tumour with a proliferation index of 2%. He was referred to the National Centre for Neuroendocrine Tumours and had an octreotide scan which showed a strong uptake at the left lower lobe of his lungs, left hilar and subcarinal masses. Further staining of his lung biopsy revealed cytoplasmic granular immunopositivity for ACTH. Based on that, he was started on somatostain analogue (SSA) in September 2016 and has had stable chest imaging since then. His ACTH remains high after the SSA, he is tanned on examination, but completely asymptomatic. This case represents a missed hidden cause of hypercortisolaemia for which the patient had surgeries, and responded well to the systemic therapy.

**P11 Incidence and risk factors for developing severe diabetic foot ulcerations (DFU) in geriatric patients from Sligo, Ireland. Relationship between depression, social**

**isolation, and cognitive impairment with DFU outcome:**

**A case-control study**

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BACKGROUND: Diabetic foot ulceration (DFU) is a well known complication of longstanding poorly controlled diabetes mellitus occurring in 6.3% of people with diabetes. The aim of this study is to determine the prevalence of depression, cognitive impairment and social isolation in people with DFU compared to those with peripheral neuropathy but no ulceration.

This was an observational, paper based questionnaire study conducted in Sligo University Hospital. Participants asked for social demographic data medical history, mini-mental test and depression score. Results: 52 subjects with peripheral neuropathy were included in the study: 26 with foot ulceration, 26 without ulceration. There was no significant correlation between DFU and depression, or duration of diabetes. Those with neuropathy but no ulceration were more likely to have a normal hba1c as a marker of good diabetes control.There was significant correlation between male gender and DFU, age of the youngest member in the house, amputation, retinopathy, and degree of neuropathy. There was no significant relationship between DFU and smoking, alcohol, living in a rural area, living alone, type of care, home help, public health nurse visit, attending a day hospital, leaving the house frequency, member of social clubs, driving, diabetic control or PAD. Conclusion: There was no relationship between depression and DFU. This finding is not consistent with the previous studies on similar comparison. Significant relation between DFU and male gender was noted. The duration of disease is not significantly associated with DFU but it was found that normal values of HbA1c were associated with less incidence of DFU.

**P12**  **Prescription practice of SGLT2-inhibitors amongst healthcare professionals in patients with T2DM and heart failure in Co. Wexford**

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Major developments have recently arisen in the management of patients with T2DM and concomitant cardiovascular diseases. The use of SGLT2-inhibitors in patients with T2DM and heart failure is one of such breakthroughs. The management of T2DM patients involves many healthcare providers at different levels of care and we decided to assess their approach with regard to this class of medications. We retrospectively recorded data of all patients with both T2DM and heart failure attending our clinic between January - April 2019. Fifty patients were eligible for inclusion in the audit. A questionnaire was circulated to 67 healthcare professionals (35 hospital-based physicians, 25 GP, 7 DNS). Forty-nine of them responded (35 hospital-based physicians, 8 GP, 6 DNS). SGLT2-inhibitors were prescribed in only 5 patients. Twenty-seven prescribers would consider SGLT2-inhibitors for patients with T2DM. Surprisingly, only 14 prescribers would consider SGLT2-inhibitors in the management of patients with both T2DM and heart failure. In general, satisfactory T2DM control already achieved with other agents was the most common reason for non-prescription. However, DNS mostly valued the side effect profile as the reason for non-prescription. This audit shows that prescription of SGLT2-inhibitors in patients with T2DM and heart failure in Co. Wexford is low at every level of care. Our findings suggest that the local prescribers are mostly aware of the role of SGLT2-inhibitors in the management of T2DM patients but, probably, not up to date with the current evidence supporting the use of SGLT2-inhibitors in the subpopulation of patients with T2DM and heart failure.

**P13 An audit of the investigation and diagnosis of hyponatraemia in a Level II Irish hospital**

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Background: Hyponatraemia is a common electrolyte disturbance associated with significant morbidity and mortality. We conducted a retrospective audit of patients with hyponatraemia admitted to St. Columcille’s Hospital over a 2 month period between 1st Dec 2018 and 1st Feb 2019. Results: 58 patients with hyponatraemia were identified. The mean age was 70.34±19.79 years. F: M was 1:1. The average length of stay was 11.4±13.7 days. 62% had mild (Na 130-134), 26% had moderate (Na 125-129), and 12% had severe hyponatraemia (Na <125). Drug history was recorded in 97% of the patients. Volume status was only documented in 53% of patients. In patients with moderate to severe hyponatraemia, the biochemical assessment was incomplete in many cases. Urine osmolality and sodium, and serum osmolality were not tested in almost half of the patients. Only 23% had cortisol tested. 57% of the patients were started on IV fluids regardless of the volume status. In more than one-third of patients with moderate to severe hyponatraemia, no aetiology was established. Drug-induced hyponatraemia was the most common cause. SIADH was diagnosed in 4% of the patients but without complete biochemical testing. Discharge summaries did not record the diagnosis in 75%, 33%, and 17% of cases with mild, moderate, and severe hyponatraemia, respectively. Conclusion: The assessment and investigations were inadequate in a significant proportion of cases. Local policy for the management of patients with hyponatraemia is needed. An algorithm will be developed and a re-audit will be conducted after educating the NCHDs and implementing the changes.

**P14**  **Can we manage women with Subclinical Hypothyroidism in pregnancy more efficiently?**

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Subclinical hypothyroidism (SCH) is a common endocrine condition in pregnancy. The ATA recommends that women with SCH have an increased dose-titration of approximately 30-45% at initial antenatal visit with monitoring of TSH every 4 weeks until mid-gestation and at least one blood draw in the third trimester. This frequency of monitoring can be difficult to schedule in busy antepartum endocrine clinics. We performed a retrospective review of 100 women with SCH. Women are typically seen every 6 weeks in the antenatal period and are scheduled for an 8 week post-partum appointment. Typically, women who are antibody negative (TPO/Anti-Thyroglobulin) commenced thyroid replacement in pregnancy and discontinued immediately post-partum. The target TSH for each trimester is ≤2.5mIU/L. Amongst the 100 women, 88% were within target at an average of 21 weeks’ gestation. At 28 weeks, 97% of women were within target. In those 3 that were outside target at 28 weeks the specific TSH values were; 3, 3.5, 3.7 mIU/L. 63% attended for their post-partum appointment. Post-partum thyroiditis developed in 6 women, all of whom were TPO antibody positive.No woman who was antibody negative had a TSH value post-partum that necessitated treatment. In our study of 100 women with SCH, the vast majority of women are within target at 21 weeks’ gestation. There is high loss to follow-up rate post-partum and of those that attended no change in treatment regime was necessary. We propose to rationalise clinic appointments amongst women with SCH who are TPO antibody negative.

**P15 Cystic Fibrosis Related Diabetes and Pregnancy Outcome**

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Women with cystic fibrosis (CF) now survive into their reproductive years. Ireland has the highest incidence of CF in the world with almost 7 in every 10,000 people with the disease. We reviewed retrospectively maternal and fetal outcomes in 12 women (15 pregnancies) with cystic fibrosis related diabetes (CFRD) attending The National Maternity Hospital between 2015 and 2018. Mean maternal age was 32.1 years. Maternal FEV1 at booking ranged from 34% to 100% predicted. CFRD was diagnosed pre-pregnancy in 7 and during pregnancy in 8 of 15. Mean booking BMI was 23.2 kg/m2 with a mean weight at booking of 58.5 kg. Mean gestational maternal weight gain was 9.98 kg. Insulin was used in 11 pregnancies (73.3%). Insulin treatment was initiated in first trimester in 3 and in second trimester in 5 pregnancies, 3 patients were on insulin before pregnancy. The mean HbA1C at booking was 36mmol/mol, 30mmol/mol in second and 33mmol/mol in third trimester of pregnancy. There were 7 spontaneous vaginal delivery, 5 caesarean section and 3 miscarriages. There was one maternal death during the second trimester of pregnancy. Average gestational age at delivery was 37 (29-39) weeks. Average fetal birth weight was 2.84 kg. Two babies required intensive care admission due to prematurity. Five babies had postnatal hypoglycemia. Diabetes and cystic fibrosis is a challenging condition in pregnancy. This is the largest cohort of patients with CFRD and pregnancy. Our data showed that high intensity multidisciplinary antepartum and intrapartum care can achieve successful outcomes for mother and baby.

**P16** **Follow up at one year and beyond of women with gestational diabetes treated with insulin and/or oral hypoglycaemic agents: a core outcome set (COS) using a Delphi survey**

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Gestational Diabetes Mellitus (GDM) has a higher lifetime risk for developing glucose abnormalities, metabolic syndrome and cardiovascular disease. Notwithstanding, there is no consistency in the long-term follow-up of women with prior GDM. Outcomes reported in research involving this population are heterogenous and lack standardization. A core outcome set (COS) is a minimum set of outcomes reported by all researchers in a specific area. It does not exclude the reporting of additional outcomes. In this study we developed a COS for research evaluating the long-term follow-up of women with prior GDM requiring insulin and/oral hypoglycaemic agents. Three work packages were required: 1. A systematic review of the literature of reported outcomes 2. A three-round, Delphi survey with stakeholders to prioritise these outcomes; 3. A consensus meeting where the final COS was decided. Of 3344 abstracts identified and evaluated, 62 papers were retrieved and 25/62 papers included in this review. A total of 121 outcomes were identified and included in the Delphi survey. Delphi Round 1 was emailed to 835 participants and 288 (34.5%) responded. In Round 2, 190 of 288 (66%) participants responded and in Round 3, 165 of 190 (87%) participants responded. Following the consensus meeting, 9 outcomes constituted the final COS: glycaemic status, pre-diabetes/T2DM diagnosis, number of pregnancies with/without a diagnosis of GDM since the index pregnancy, BMI, post pregnancy weight retention, resting blood pressure and breastfeeding. This COS will bring consistency and uniformity to outcome reporting in clinical research involving the follow-up of women with prior GDM.

**P17**  **Pregnancy outcomes in women with gestational diabetes with and without pregnancy related hypertensive disorders**

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Gestational hypertension (GHTN) and GDM are independent risk factors for adverse maternal and foetal outcomes. The aim of this study was to assess the difference in baseline characteristics and maternal and infant outcomes between women having GDM with and without GHTN and/or PET. We conducted an observational retrospective study which included 1111 women with GDM alone and 171 women with GDM and GHTN and/or PET (GDM-H). Baseline characteristics and rates of maternal outcomes and neonatal outcomes were compared between groups. Women with GDM- H had a higher baseline BMI (34.2 kg±6.5 vs 31.5 kg±6.4, p<0.01) and higher rates of baseline systolic (SBP) and diastolic (DBP) blood pressure (SBP 128±17.3 vs 119±12.6, p<0.01; DBP 78±9 vs 70±9, p<0.01) compared to the GDM alone group. Women in the GDM-H group delivered their babies earlier than women in the GDM alone group (38.6±2.1 vs. 39.2±1.8, p<0.01). GDM-H women had higher rates of emergency CS (26.3% vs 14.2%, p<0.01) and post-partum haemorrhage (14% vs 5.7%, p<0.01) compared to the GDM alone group. Infants of GDM-H mothers had higher rates of SGA (2.1% vs 13%, p<0.01) and intensive care admission (37.8% Vs 29.8%, p<0.05) compared to infants of GDM alone mothers. Women with GDM-H and their babies display greater pregnancy morbidities. Booking maternal weight is a modifiable characteristic that may impact on these adverse pregnancy outcomes. In addition, limiting excessive gestational weight gain in this cohort may be of benefit. Both of these suggestions need to be explored through future research in this population.

**P18 The Domino Effect**

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Alemtuzumab, a humanised anti-CD52 monoclonal antibody, is approved for the treatment of active relapsing-remitting multiple sclerosis (MS). Alemtuzumab induces a rapid and prolonged depletion of lymphocytes, which results in profound immuno-suppression followed by an immune reconstitution phase. Graves’ disease (GD) is the most frequent autoimmune side effect of the drug with an estimated prevalence ranging from 16.7 to 41.0% of MS patients receiving Alemtuzumab. We report the case of a 35 years old female with MS diagnosed in 2004. She received 2 cycles of Alemtuzumab. She was noted to have biochemical hyperthyroidism [FT4 29.1 pmol/L (Ref: 12-22 pmol/L) TSH <0.02 mU/L (Ref: 0.3-4.3 mU/L)] 1 year following the second Alemtuzumab infusion. A subsequent thyroid uptake scan and high TRAb titres confirmed GD. She was commenced on Carbimazole. 6 months later, she was admitted to hospital with haemoptysis, fever and night sweats. Imaging was consistent with pulmonary haemorrhage. A vasculitic screen was strongly positive with anti MPO ANCA >600 (0-3.5 IU/ml). The patient was diagnosed with Carbimazole induced vasculitis. Carbimazole was discontinued; Lithium and a beta blocker were commenced to control the hyperthyroidism; Azathioprine was commenced to treat vasculitis. Repeat serology after 3 months showed improvement in TFTs (TSH 0.07 m/L and T4 17.9 pmol/L.) and a down trending antibody titer Anti MPO ANCA (170 IU/ml). This case is intended to emphasise the importance of pre-treatment thyroid screening and follow-up in patients on Alemtuzumab. It also highlights the occurrence of vasculitis as a possible but very rare side effect of Carbimazole.

**P19 Metastatic neuroendocrine tumour presenting with right-sided carcinoid heart disease.**

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We present a case of a small bowel neuroendocrine tumour presenting with right sided heart failure due to carcinoid heart disease. A 71-year-old female presented to Cardiology clinic with symptoms of heart failure and a murmur on examination. Echocardiography revealed severe tricuspid and pulmonary regurgitation highly suggestive of carcinoid heart disease. Subsequent questioning revealed a history of intermittent flushing and diarrhea for two years. Workup showed elevated Urinary 5-HIAA (229) and markedly elevated Chromogranin-A (867 ng/ml). Initial imaging with I-111 Somatostatin positron emission tomography-computed tomography revealed an octreotide avid adnexal mass and subtle periportal and small bowel mesentery uptake with no evidence of liver disease. The patient was commenced on long acting somatostatin with symptomatic relief. Initially the patient underwent bioprosthetic aortic, tricuspid and pulmonary valve replacement prior to definitive treatment of her neuroendocrine tumour given the severity of her cardiac disease. Histological examination of the cardiac valves was in keeping with carcinoid heart disease. Subsequent Ga68-DOTATATE PET-CT confirmed the small bowel as primary site of the neuroendocrine tumour and revealed two small liver metastases and confirmed bilateral ovarian metastases. Our case highlights the typical pathognomonic cardiac findings of carcinoid heart disease with right and left sided valvular disease and the importance of Ga-DOTA-conjugated somatostatin peptides in identifying and accurately staging an occult neuroendocrine tumour when metastases have been identified on other imaging modalities.

**P20 Incidentally-discovered giant Prolactinoma with lower cranial nerve palsies – a case report**

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A previously well 35-year-old man presented to the emergency department with neck pain following a slip on snow. X-ray of the cervical spine demonstrated loss of clear definition of the pituitary fossa floor. Subsequent CT-brain showed a highly aggressive central midline process with suprasellar and intra-sphenoidal clivus extension with bony destruction. MRI confirmed a 74 cc lesion, likely to be pituitary in origin. Clinical examination revealed hypophonia and a poor swallow. The patient was assessed by Speech and Language Therapy and deemed unsafe for oral intake due to risk of aspiration. Video fluoroscopy demonstrated findings consistent with dysfunction of cranial nerves IX, X and XII. Serum prolactin was tested and was elevated at 281,433mU/L, with testosterone low at 3.3nmol/L, FSH 1.1U/L, LH 1.3U/L. A nasogastric tube was inserted at gastroscopy and the patient was commenced on cabergoline. He regained normal swallow within weeks of starting treatment and was switched to oral cabergoline. Over the space of a number of months the prolactinoma reduced in volume from 74cc to 46cc, and prolactin fell to 35000 mU/L. Retrospectively he reported reduced libido, which also improved with treatment. We report the case of the incidental discovery of a giant prolactinoma with bony destruction causing lower cranial nerve palsy. Giant prolactinomas are rare, and lower cranial nerve dysfunction is a rare complication of this rare condition.

**P21 Management of Diabetic Ketoacidosis in Mayo University Hospital: Basal insulin and its effect on length of hospital stay**

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Diabetic Ketoacidosis (DKA) is a common medical emergency occurring in 10% of type 1 diabetics. Basal insulin has a key role in facilitating quicker transition from continuous intravenous insulin to subcutaneous maintenance therapy. This audit was performed to determine if basal insulin is regularly administered for these patients and its effect on hospitalisation length. A list of patients with DKA between July 2017 to January 2019 was taken through HIPE coding and charts obtained. Data was obtained including age, duration of diabetes, HBa1c, basal insulin administration and length of stay. 16 patients presented with DKA in that time frame. There were 9 females and 7 males. Average age of patients admitted with DKA was 33.8±17.8 years old with duration of diabetes at 11.6±9.3 years. Average Hba1c was 98.8±19.8mmol/mol. Total maintenance insulin dose was 42.2±13.6units with 17.1±5.2units being basal insulin and 25.1±10.0units being bolus insulin. 8 patients were administered basal insulin concurrently with continuous intravenous insulin while 8 were not. For those administered basal insulin, their average time on continuous intravenous insulin was 1.38±0.88 days with 2.88±1.13 days spent in hospital. Those not administered basal insulin on admission had 1.88±0.35 days on continuous intravenous insulin with 6.14±1.95 days spent in hospital. The results above show the importance of basal insulin in the resolution of DKA. Awareness of the importance of basal insulin in management of these patients should be highlighted to all medical physicians and NCHDs. This would reduce prolonged hospitalisations and ensure more rapid recovery for these patients.

**P22 A method comparison of the Roche Intact PTH method versus the Roche Whole PTH (1-84) method based on eGFR.**

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Parathyroid Hormone (PTH) plays an important role when investigating calcium metabolism. Immunoassay specificity for PTH has improved incrementally with newer generations. Despite this, second-generation PTH immunoassays may overestimate PTH concentration by measuring both the 1-84 PTH and C-terminal fragments, most notably PTH (7-84) in patients with significant renal impairment. The newest immunoassays reportedly only recognise the PTH 1-84 polypeptide. We compared the third-generation Roche Whole PTH (1-84) immunoassay with the second-generation Roche Intact PTH immunoassay based on estimated glomerular filtration rate (eGFR). 100 serum samples, selected according to eGFR to ensure an even spread across each of the KDIGO Chronic Kidney Disease (CKD) stages 1 to 5 were used. At all PTH concentrations the second-generation method produced higher results: at higher PTH concentrations (Mean Difference: 22%; 95% Confidence Interval: 19-26%) and in samples from patients with CKD Stages 3 to 5. The third-generation Roche Whole PTH (1-84) method measured lower as eGFR decreased: CKD Stage 3 (Mean Difference: 21%; 95% Confidence Interval: 12-30%) to CKD Stage 5 (Mean Difference: 46%; 95% Confidence Interval: 26-66%). The second-generation Roche PTH Intact method produced significantly higher PTH concentrations compared to the third-generation Roche Whole PTH (1-84) through CKD stages 3 to 5. Routine use of the Roche Whole PTH (1-84) assay may be useful as a reflex test for patients with advancing chronic kidney disease or undergoing dialysis as a tool to monitor metabolic bone disease risk. Dual reporting of PTH by both methods is initially recommended in those with eGFR <60 ml/min.

**P23 Improving outcomes for young adults with type 1 diabetes in Ireland: the D1 Now randomised pilot study protocol**

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Young adults (18-25 years) living with Type 1 Diabetes (T1D) often have poor self-management skills and sub-optimal glycaemic control. Using guidance from the Medical Research Councils Framework for the Development of Complex Interventions and involving a panel of young adults living with T1D, the D1Now intervention has been developed to improve outcomes for this group. It includes three components – a support worker, an interactive messaging system to improve contact between clinic visits and an agenda setting tool for use during consultations. Five hospital sites will take part in the pilot RCT – three in the intervention group and two in control group. We will recruit 15-20 young adults with T1D at each site. Eligibility criteria include a diagnosis of T1D for greater than 12 months and being in the 18-25 age group. Outcomes will come from a recently published Core Outcome Set for studies of young adults with T1D and will be measured at baseline and after 12 months follow-up. The D1 Now Randomised Pilot Study aims to answer the following questions:1.Is the intervention both feasible and acceptable to staff and patients? 2.Will the intervention be delivered as designed (i.e. can fidelity be guaranteed)? 3. What is the optimal number of diabetes centres and young adults with T1D needed for a definitive RCT?4. What are the recruitment and retention rates of diabetes centres and participants? Findings from this pilot study will inform the protocol for a definitive RCT evaluating the D1Now intervention.

**P24**  **Incidence and Characteristics of Thyroid and Pituitary Dysfunction in Patients treated with Immunotherapy**

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Endocrinopathies are well recognised immune-related adverse events associated with immunotherapy. Incidence rates of hypophysitis and thyroid dysfunction are widely variable in the literature. Our aim was to determine real world rates of these endocrinopathies and to evaluate the characteristics of same. A retrospective cohort study was performed in 347 patients who received treatment with PD-1 inhibitors nivolumab and pembrolizumab, anti-CD52 antibody alemtuzumab and CTLA-4 inhibitor ipilimumab between January 2013 and December 2017 at a tertiary referral metropolitan hospital in Melbourne, Australia. 45 patients (12.9%) had evidence of thyroid or pituitary dysfunction from the therapies. 34 of the 267 (12.7%) patients on PD-1 inhibitors developed thyroid dysfunction, 15 (5.6%) of whom had a clear thyroiditis picture-i.e. thyrotoxic phase with subsequent hypothyroidism. 3 of the 34 (8.8%) patients who received CTLA-4 inhibitor ipilimumab developed hypophysitis. Median time to onset of adverse effects was 30days. 25 of the 45 (55.6%) patients were reviewed in endocrine outpatient clinics. In our tertiary centre, endocrinopathies are common in patients treated with immunotherapies however endocrinology services appear underutilised. Current guidelines suggest TFT monitoring every 4-6weeks on therapy (2) with baseline monitoring of early morning ACTH and cortisol concentrations to be considered in patients treated with CTLA-4 inhibitors. Greater clinician awareness and adherence to guidelines is needed for optimal patient care.

**P25 “Thyroid storm- a rare but potentially fatal complication of thyrotoxicosis”**

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Thyroid Storm is an acute life-threatening hypermetabolic state induced by thyrotoxicosis. It is rare with an incidence of 0.2 per 100,000 hospital inpatients but carries a mortality rate of approximately 10% (1). We describe a 53 year old lady who presented with a 3 day history of dyspnoea, cough, fever and worsening confusion. She described a more chronic history of palpitations. On presentation she was in atrial fibrillation (160bpm), tachypnoeic (40 respirations/min) and febrile (40ºC). She was diagnosed with bilateral lobar pneumonia and was noted to have periorbital oedema and proptosis. Laboratory investigations revealed TSH <0.02mIU/L (0.27-4.2mIU/L), Free T4 67.8pmol/l (12.0-22.0pmol/L) and Free T3 of 15.2pmol/L (3.1-6.8pmol/L). TSH receptor antibody was positive at 11.3 IU/L (0.0-1.75IU/L*).*Burch Wartofsky score was 95 which is highly suggestive of thyroid storm. She was transferred to ICU for inotropic support and ventilation. She was treated with propylthiouracil 200mg via NG every 4hours, lugol’s iodine 10 drops tds, hydrocortisone 100mg qds and cholestyramine 4g 6 hourly NG. Her ICU stay was complicated by cardiac arrest requiring pacemaker. She was discharged home after 63 days with a normal free t4 and free t3 and was scheduled for urgent outpatient thyroidectomy. Thyroid storm is a life threatening, complex condition requiring emergency treatment. Treatment options such as beta blockade are limited by cardiovascular instability. Definitive treatment with radioactive iodine or thyroidectomy is deferred until euthyroidism is achieved.

**P26 Flash glucose monitoring system uptake in a specialist diabetes centre; cohort demographics**

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Measurement of blood glucose is a corner stone of diabetes management. Traditionally for most patients, this requires the measurement capillary blood glucose using “finger sticks”, a painful and time consuming method. The Freestlye libre device is a flash glucose monitor (FGM) which provides instant glucose readings when the receiver is swiped over the implanted sensor. Since the 1st of April 2018 the device has been reimbursed by the HSE for patients with type 1 diabetes under 21 years of age and other patients on a case by case basis. Patients are also self-funding the device. We reviewed 152 active FGM users in our clinic. 127 had type 1 diabetes, 2 had type 2 diabetes and 23 Cystic-fibrosis related diabetes. There was slight female predominance (78/152). 30% (n=46) were self-funding, with 47% (n=71) of patients receiving funding through exceptional circumstances and 23% (n=32) meeting HSE criteria for re-imbursement. The mean HbA1c prior to starting FGM was 69.2+/-21 mmol/mol (40/152). Mean HbA1c was 66.9+/- 15.7mmol/mol (105/152) after accessing the device. We currently only have HbA1c data on 8 patients pre and post starting FGM. The median age for all users was 32 years, with a range of 16-72 years. Currently 68% (33 out 48) of our patients under 21 years are using FGM. Overall we have had excellent uptake of FGM in our under 21 group in a relatively short timeframe. Despite the large proportion of patients receiving funding through exceptional circumstances, there is a lack of clarity as to the criteria.

**P27 Factors associated with presence and severity of obstructive sleep apnoea in patients with Type 2 Diabetes Mellitus**

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BACKGROUND: Type 2 diabetes (T2DM) and obesity are associated with higher risk for obstructive sleep apnoea (OSA). OBJECTIVE: To assess factors associated with presence and severity of OSA in patients with T2DM. METHODS: Consecutive newly-referred patients with T2DM and BMI>30 kg/m2 had an Epworth Sleep Score (ESS) performed at first visit and were asked about neck size, snoring, apnoeic episodes. Patients with Epworth Sleep Score (ESS) ≥ 9 were referred for sleep studies. RESULTS: 259 patients had ESS performed during the period of study. 68 patients (26%) had ESS ≥ 9 suggesting possible OSA and were referred for sleep studies. Patients with a high ESS were more likely to be obese, mean BMI 37.12±5.48 (ESS≥9) vs 35.98±5.07 kg/m2 (ESS<9) p=0.106. Those with ESS≥9 were more likely to report snoring episodes (88.9% vs 64.9%)p=0.005 and apnoeic episodes (33.8% vs 18.3%)p=0.008. 23 patients had sleep studies performed, 21 were diagnosed with OSA (14 males). Mean patient age was 54.3±10.3(40-84)years, mean HbA1c 58.6±18.6(39-120) mmol/mol, BMI 35.25±4.2(30.6-45.0) kg/m2, mean self-reported neck size 44.0±3.7(35-51) cm. Mean AHI in OSA patients was 30.1±27.4(30.1-101). AHI was associated with increased self-reported neck size(p=0.012) CONCLUSIONS: 26% of obese T2DM patients screened for OSA at first clinic visit had ESS ≥ 9 and OSA was confirmed in the majority of patients who completed sleep studies. In patients with confirmed OSA increased neck size correlated to severity of OSA but there was no association between glucose control and sleep parameters.

**P28 Users experiences of Flash glucose monitoring on daily life experiences.**

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Flash glucose monitoring (FGM) is a new trend of glucose monitoring with people aged 4-21 able to get it “free” through the Irish Healthcare System but many more adults self-paying and anxious to have it available “free”. The Health Service Executive are reviewing the cost of “free” FGM against glucose strip costs to help inform reimbursement policy. However, self-paying people believe diabetes control, quality of life and personal experience should also be included. In April 2019, Diabetes Ireland undertook on online survey asking people using FGM to give their views on its effect on their diabetes self-management experiences. Data was collected as quantitative- demographics and strip usage, and qualitative – open questions.

309 people responded with equal representation of “free” users and self-payers and across all age groups except under 5’s (not licenced for under 4’s). People scanned at least as recommended i.e. over 9 times a day (more common in self-paying group) with an average reduction in strip usage by 66% (more so in “free” users). Most importantly, the recurring themes in the open question about daily experiences were Control i.e. better control, benefit of additional data and freedom. Confidence i.e. in making adjustments, security of knowing trend, can anticipate and prevent problems, Privacy i.e. encourages invisible checking, discreet, and Makes Life Easier i.e. sleep, avoid hypos and turned on light in diabetes management.

This survey clearly demonstrated the need to include the user perspective when making re-imbursement policy decisions as FGM is becoming a “diabetes angel” and “lightbulb moment”.

**P29 Insulin Prescribing in an Acute Hospital Setting : A Point Prevalence Audit**

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Medication errors are a common and preventable cause of adverse outcomes in hospitalised patients. Insulin is a high risk medication with the potential to cause serious harm if not administered correctly. The aim of this study was to examine current insulin prescribing practices in Connolly Hospital Blanchardstown (CHB) with the intention of developing a quality improvement plan should prescribing errors be identified. A hospital-wide point-prevalence audit involving all patients in the hospital treated with insulin was conducted over a one week period. This involved reviewing the medication kardex and bedside folder of patients on all types of insulin including: basal, bolus and mixed insulins, sliding scale and intravenous insulin. A number of measures were assessed relative to the expected prescribing standards, including the use of brand name, whether the dose was stated, prescription of “units” rather than “iu” or “u”.During one week, a total of 232 patients were captured across 12 wards with 18 patients identified receiving insulin (8%). A total of 58 errors were identified among the 41 insulin prescriptions, with an average of 1.4 errors per prescription. The most frequent error involved the lack of documentation on the main kardex that additional insulin prescriptions (i.e sliding scales) were in place. We conclude that insulin prescribing errors are common in the acute hospital setting. While the reasons for the errors are presumably complex, a number of system failures are believed to have contributed. An insulin-specific kardex will be designed to reduce the frequency of insulin prescription errors.

**P30 Aspirin prescribing for primary prevention of cardiovascular disease in patients with type 2 diabetes; a review of practice at University Hospital Galway**

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Background: Individuals with type 2 diabetes (T2DM) are at increased risk of cardiovascular disease (CVD). Guidelines for antiplatelet use as primary prevention in T2DM vary. The 2019 American Diabetes Association (ADA) guidelines recommend aspirin in those with T2DM at increased risk of CVD aged ≥50 years while the NICE guidelines do not recommend aspirin in T2DM without established CVD. We sought to determine aspirin prescribing practices for primary prevention in T2DM patients attending our local services. Methods In January 2019 we interrogated our electronic diabetes database (DIAMOND) to identify patients aged ≥50 years with T2DM and without established CVD. Results A total of 868 patients were identified. Of these 375(43.2%) were on aspirin or anticoagulants. Those on aspirin or anticoagulants had a mean HbA1c of 56mmol/mol. Of these 45(12%) were smokers, 93(24.8%) had microalbuminuria and 127(33.9%) had hypertension. 493(56.8%) patients were not on aspirin or anticoagulants. In the non- treated group the mean HbA1c was 58mmol/mol, 34(6.9%) were smokers, 83(16.8%) had micro-albuminuria and 132(26.8%) had hypertension. Conclusion Reviewing this data we believe there is a significant percentage of T2DM patients attending our services with established risk factors for CVD who are not on antiplatelet therapy. This may in part reflect the current lack of international consensus on aspirin prescribing in T2DM. We recommended the establishment of a locally agreed protocol and education programme for aspirin prescribing in T2DM based on the 2019 ADA guidelines. We plan to re-audit its implementation in 2020.

**P31 Are we over treating thyroid disease in our older population?**

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Introduction The prevalence of subclinical thyroid disease is increasing with an aging population. Management of this condition remains controversial. Over treatment of subclinical hypothyroidism in older persons can be associated with significant morbidity and guidelines recommend a cut-off value of TSH ≥ 10 mIU/L before treating. Our aim was to determine the prevalence of abnormal thyroid function in older hospitalised patients in the West of Ireland and to determine how these individuals were treated. Methods We reviewed thyroid function tests (TFTs) processed through the local laboratory between January and December 2018 on individuals aged 85 years and older. Discharge prescriptions on those with abnormal TFTs were reviewed to determine if participants were on thyroid treatment. Results 1168 participants were included in this review, the majority of which were female with a median age of 88 ±3.252 years. 24.41% (n=285) had abnormal thyroid function; 0.77% (n=9) were hyperthyroid, 7.28% (n=85) had subclinical hyperthyroidism, 13.78% (n=161) had subclinical hypothyroidism and 2.57% (n=30) were hypothyroid. 16.47% (14/85) of those with subclinical hyperthyroidism and 26.08% (42/161) of those with subclinical hypothyroidism were taking levothyroxine. Discussion Thyroid dysfunction is common in the older population admitted to Galway University Hospital. One quarter of those identified with subclinical hypothyroidism were on thyroid treatment which may not be clinically indicated. 16% of cases of subclinical hyperthyroidism may have been iatrogenic in the presence of over treatment with levothyroxine. These findings highlight the importance of the regular review of medications in older persons on treatment for thyroid disorders.

**P32 Hereditary Haemochromatosis in Newly-Referred Irish patients with Diabetes Mellitus – utility of screening**

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Hereditary Haemochromatosis (HH) is the commonest inherited disorder in the Irish population. Diabetes mellitus (DM) is the commonest endocrine complication of HH. The prevalence of DM in HH has declined in recent years, likely as a result of earlier detection of HH prior to significant iron overload. This study evaluates the utility of screening for HH in newly-referred diabetes patients. Patients newly-referred to our DM clinic were invited to attend for blood testing, to include fasting transferrin saturations. 462 patients of Irish descent were referred between January 2016 and December 2018. 335 attended for blood testing as planned, 122 women, 213 men, mean age 58.76, mean HBA1c 63 mmol/mol, mean transferrin saturations 28.84%. 10 patients had elevated transferrin saturations (>50% for women, 55% for men), 5 men (2.3%) and 5 women (4%). 7 of these patients had proceeded to genetic screening for HH at the time of study. Of the 7, 3 were homozygous for the C282Y mutation, confirming HH, 2 were heterozygous for C282Y, 1 patient was heterozygous for H63D and 1 patient was compound heterozygote with one mutation in each gene. 2 patients had normal genetic screens. The prevalence of a new diagnosis of HH in this population of newly-referred Irish DM patients was between 1.2 and 2%, lower than the general population estimates. This suggests that routine screening for HH in DM is not justified in our patient population, and that HH in patients with DM in the modern era may be co-incidental rather than causative.

**P33 An audit of fertility post haematopoietic stem cell transplant in a large tertiary centre**

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St James’s Hospital (SJH) is the third largest haematopoietic stem cell transplantation (HSCT) centre in Europe. Premature ovarian failure (POF) is the most common endocrinopathy in women post-HSCT. 124 women of reproductive age (16-40years) had allogeneic HSCT over 10 years (2007-2017) in SJH. Data regarding fertility counselling, ovarian reserve assessment, diagnosis and management of POF were collected from SJH electronic patient records.

Of 124 women, 6 had prior POF diagnosis. 33 died during treatment, 17 were discharged to local services thus 74 were followed up in SJH haematology late effects clinic. Pre-HSCT counselling regarding the high risk of infertility was explicitly documented as discussed with 54% (62/124); with 7 referred for oocyte cryopreservation. In the long term follow up group, 96% of patients were diagnosed with POF; 2 continued to menstruate regularly at most recent review. Average time to diagnosis of POF post- HSCT was 12 months, however the longest interval was 4 years. Data regarding menstrual history was lacking. Once a diagnosis of POF was made, 57% (41/71) were treated with appropriate hormone replacement therapy.

Women undergoing HSCT are at high risk of POF and infertility, mostly occurring after a short interval. All women should be counselled regarding fertility and offered oocyte cryopreservation prior to HSCT if suitable, but often there is insufficient time if treatment is urgent. Post HSCT, those that continue to menstruate should have prompt assessment of ovarian reserve as there may be a limited window of opportunity where pregnancy/oocyte cryopreservation could be considered

**P34 The use of octreotide in the management of sulfonylurea induced hypoglycaemia.**

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Sulfonylureas are commonly used in the management of type 2 diabetes mellitus. One of the most common side effects of sulfonylurea is hypoglycaemia, which can be bimodal and refractory to treatment with dextrose alone.We report an 88-year-old female with type two diabetes (on gliclazide 30MR), who presented with a blood sugar level of 1.2, in the context of respiratory sepsis, poor oral intake and continued usage of sulfonylurea. Initial management included a dextrose 20% bolus and dextrose 5% maintenance infusion without any sustained recovery. Over the next sixteen hours she remained hypoglycaemic despite escalation to dextrose 10% infusion, oral carbohydrates, and two further boluses of dextrose 20%. Serial blood tests demonstrated an evolving hyponatraemia. The patient was commenced empirically on steroids while awaiting a random cortisol. Lab results confirmed normal thyroid function tests, cortisol, renal and bone profiles. The c-peptide was 8.38 nanograms per milliliter. Despite continuous dextrose infusion and steroids, her hypoglycaemia and hyponatraemia did not resolve. We administered octerotide 50mcg subcutaneously for presumed sulfonylurea toxicity, which resolved her hypoglycaemia within an hour and avoided an HDU admission. The patient remained euglycaemic thereafter and her sodium corrected.

Octreotide is well studied as an antidote for the management of sulfonylurea-associated hypoglycaemia. Octreotide is a somatostatin analog, which binds to somatostatin-2 receptors located on pancreatic β cells, preventing the influx of calcium required for insulin secretion. This case highlights the efficacy of octreotide in managing rebound hypoglycaemia after sulfonylurea ingestion.

**P35 Carbimazole-Induced Vasculitis: A rare adverse event of a relatively common drug**

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Hyperthyroidism is a common endocrinopathy and is mainly treated with anti-thyroid medications like propylthiouracil and carbimazole. These medications have many adverse effects, including benign skin rashes, and life-threatening agranulocytosis. Vasculitis is a rare adverse event, and ANCA positivity is rarely if ever associated with drugs such as carbimazole (1). We report an eighty-four year old female patient with Grave’s disease who developed ANCA-associated vasculitis with pulmonary involvement while on carbimazole. She recounted a three month history of fatigue, anorexia, and weight loss. The patient was admitted for further evaluation and during this time developed intermittent fevers and dry cough. Following an extensive panel of investigations and maximum medical therapy her symptoms failed to resolve. An autoimmune screen later revealed elevated Myeloperoxidase (MPO) antibody titres. A presumptive diagnosis of microscopic polyangiitis was made. Withdrawal of Carbimazole with commencement of high-dose steroids, followed by Methotrexate led to remarkable improvements in both symptoms and a reduction in vasculitic markers. This case highlights the awareness of this rare clinical entity and adverse effects of a thyroid medication which may lead to fatal renal and pulmonary complications. Early diagnosis and withdrawal of the offending medication is critical in effective management.

**P36 Pre-gestational Diabetes and Pregnancy Outcomes**

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Pre-gestational diabetes, type 1 diabetes (T1DM) and type 2 diabetes (T2DM) are associated with adverse outcomes: miscarriage, stillbirth, macrosomia and increased rates of Caesarean Sections (CS). We reviewed 175 women with pre-gestational diabetes who attended the National Maternity Hospital in Dublin, Ireland between 2015 to 2017. Fifty women (29%) had T2DM and 125 women (71%) had T1DM. The mean age for T1DM group was (33.8 ± 4.7years) and T2DM (35.5 ± 3.8 years). Mean duration of diabetes was 15.7 years in T1DM and 5.4 years in T2DM. Forty women (32%) of T1DM were on Continuous Subcutaneous Insulin Infusion (CSII). Patients with T2DM were treated with Metformin only (20%), Metformin and multiple dose insulin (MDI) combined (44%), MDI (28%) alone and diet control (2%). Mean BMI for T2DM was 32.6 ± 8.1 kg/m2 at booking and for T1DM 26.2 ± 4.5 kg/m2. The mean HbA1c in T1DM was 57 mmo/mol at booking and 44 mmol/mol in the third trimester. The mean HbA1c in T2DM at booking was 44.5 mmol/mol and 37.5 mmol/mol in the third trimester. CS was common in T1DM 48% and 38% in T2DM. The most neonatal ICU admission was due to hypoglycemia; in the T1DM was 16.5% and 10% in T2DM. Neonatal birth weights above 4.0 Kg in T1DM (21.6%) and in T2DM (22%). Our cohort with pre-gestational diabetes were overweight, older with long duration of diabetes. Initial inadequate diabetes control significantly improved with multidisciplinary team approach and resulted in positive outcome in majority babies and mothers.

**P37 Treatment requirements in women testing negative for Gestational Diabetes using NICE diagnostic criteria**

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Guidelines produced by the UK National Institute for Health & Care Excellence (NICE) in 2015 proposed new diagnostic criteria for Gestational Diabetes Mellitus (GDM); a fasting plasma glucose ≥5.6mmol/L and/or 2-hour plasma glucose of ≥7.8mmol/L on 75g oral glucose tolerance testing (OGTT). These criteria were established on the basis of a cost effectiveness analysis and differ from those previously established by the International Association for Diabetes in Pregnancy Study Group (IADPSG) (Fasting glucose ≥5.1, 1-hour ≥10.0 and/or 2-hour ≥8.5mmol/L).Many centres, including ours, continue to use the IADPSG criteria owing to concern that the NICE diagnostic criteria may not capture an adequate proportion of pregnancies with clinically relevant hyperglycemia at increased risk of adverse pregnancy outcomes. To examine this, we reviewed OGTT results from 600 women who were enrolled in a larger prospective cohort study. All women were screened by OGTT at 28 weeks’ gestation on the basis of NICE defined risk factors. Women with a history of previous GDM were excluded.There were 122 cases of GDM (20.3%) when IADPSG criteria were applied and 78 cases (13%) using NICE criteria. Of those patients who screened positive by IADPSG, 59 cases (48.4%) would be missed by substituting NICE criteria. Of these 59 NICE ‘misses’ pharmacotherapy was required in 27 cases (46%) with 18 of these requiring insulin therapy and 9 requiring Metformin alone. Use of NICE criteria in this group would fail to detect a large proportion of patients who have clinically relevant hyperglycemia requiring pharmacotherapy.

**P 38 The recognition and documentation of obesity amongst medical inpatients in St Columcille’s Hospital Loughlinstown.**

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The recognition of obesity facilitates individual patient care and is also required for service planning purposes. International studies have suggested that obesity in inpatients is under-recognised by clinical teams and under-documented by coders, but this has yet to be investigated in the Irish setting. The aim of this study was to examine the rates of recognition and documentation of obesity in our hospital. This was a retrospective review of randomly selected medical admissions from 2018. Clinical notes, discharge letters and coding reports were reviewed for evidence of body mass index (BMI) calculation and the documentation of obesity if present.In total, 75 admissions (48 female) were reviewed with a mean age (±standard deviation) of 59±20years. BMI was calculated in 69/75 (91%) cases, predominantly via the completion of the Malnutrition Universal Screening Tool (MUST) by nursing staff. Within this group, the mean BMI was 26.42kg/m2 (range of 14.2 to 40.8kg/m2), with 17/69 (25%) patients having a BMI of >30kg/m2. The presence of obesity was documented in the clinical notes and/or discharge letters by the medical team in 2/17 (12%) cases, and these 2 cases (but no others) were coded as having obesity. Despite the frequent calculation of BMI in our hospital obesity was rarely documented in the medical notes or captured by coding. In addition to identifying the need to improve our recognition and reporting of obesity, these results also suggest that databases based on coding (such as HIPE) may significantly under-report the prevalence of this disease in our healthcare system.

**P39 Stroke as a complication of testosterone misuse**

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We report the case of a 36-year-old male who presented with a two-hour history of left hemiparesis, left upper motor nerve facial palsy, left sided sensory deficit and left side neglect. He had an urgent CT brain which showed no haemorrhage or early signs of infarct. The bolus of tPA was administered post Ct brain while awaiting angiogram. His CT angiogram showed a right ICA occlusion, his thrombolysis infusion was continued and he was referred to Beaumont for thrombectomy. The following day he still complained of headache and facial sensory disturbance but the remainder of his symptoms had resolved. At this stage he admitted to drug misuse. He had been taking the following regime for approximately 7/12 of each of the previous 6 years: Enanthate 200mg x6/12, cypionate 250mg once weekly for first 6/52, propionate 100mg three times weekly for first 2/52, anastrazole – unsure of dose would buy half a tablet and take it three times/week on alternative months and occasionally tamoxifen. His blood work taken on Day 2 of admission is as follows: LH <0.1 IU/L (1.7-8.6 IU/L), FSH 0.2 IU/L (1.5-12.4 IU/L) and testosterone >52.00 nmol/l. ASCO stroke criteria were used to investigate the cause of stroke. A transoesophageal echo with bubble study showed no evidence of patent foramen ovale. His holter and prolonged telemetry were normal. His thrombophilia screen was negative. His MR imaging revealed no small vessel disease, microbleeds or leukoaraiosis. It was deemed that the cause of his stroke was his exogenous anabolic steroid use.

**P40 First trimester antenatal biochemical screening, is it worthwhile?**

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Pregnancies with undiagnosed underlying pathologies are at higher risk of adverse outcomes. Trimester one (T1) is considered to be the most opportune time to intervene to minimize risks for both mother and infant. Routine T1 antenatal biochemical screening is not current clinical practice. We implemented universal T1 biochemical screening for pregnant women presenting to Galway University Hospital in December 2018. This prospective study analysed the outcomes of this change to practice in 669 women. The antenatal care profile includes thyroid function, liver and renal profile, calcium, HbA1c, glucose and iron studies. Test results were evaluated using both quoted non-pregnant and T1-specific reference intervals. The HbA1c decision threshold (36mmol/mol or 5.4%) established in early pregnancy to predict gestational diabetes with a diagnostic sensitivity and specificity of 27% and 95% identified 29 (4.3%) women. A total of 42 (6.3%) women were deemed iron deficient using non-pregnant reference intervals. However, when T1-specific intervals were applied, 135 (20.2%) women were identified as having iron deficiency. Four women were hypercalcaemic, two of whom required hospitalisation. Thirteen percent (n=87) of women had TSH levels >2.5mIU/L with one patient having a markedly elevated TSH of 100 mIU/L.This analysis of a clinical practice change using T1-specific reference intervals identified 252 of 669 (37.7%) abnormalities at a cost of €22.50/woman. These preliminary findings suggest that trimester-specific reference intervals are critical to identify women with abnormal results in early pregnancy. We advocate biochemical testing in T1 on all pregnant women as unrecognized pathologies may impact negatively on pregnancy outcomes.

**P41 Improvement in quality of life (QoL) in patients with adrenal insufficiency following treatment with modified release hydrocortisone therapy.**

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Introduction: Patients with adrenal insufficiency (AI) have impaired quality of life (QoL). Immediate release hydrocortisone (IR-HC) does not mimic the endogenous circadian pattern. Once-daily modified release hydrocortisone (MR-HC) preparation, (Plenadren®), may improve compliance and address unmet needs. Objective: To assess HRQoL in patients with adrenal insufficiency [primary (PAI) and secondary (SAI)], who were enrolled in an investigator-initiated, prospective, crossover study to compare once-daily MR-HC with standard IR-HC. Study Design and Methods: 36 AI patients (58% male, 18 PAI, 18 SAI), assessed at baseline, and following 12 weeks of MR-HC, with Short Form-36 (SF-36), Nottingham Health Profile (NHP) and Addison’s specific, AddiQoL questionnaires. Results: At 12 weeks, there was a significant improvement in the mean overall score in the SF-36 (67 v 73; p =0.02). Two SF-36 subdomains, physical functioning (61 vs 82, p=0.02), and vitality (57 vs 59,p=0.05), improved following MR-HC. Following MR-HC there were improvements in energy levels in the Nottingham Health Profile (baseline 35 vs 21.4 at follow-up, p for change =0.03). In sub-analysis, there was no significant difference between the PAI and SAI cohort in terms of reported QoL at baseline or post 12 weeks of MR-HC therapy. All patients (100%) reported a preference to continue on MR-HC post the study period. Conclusion: Replacement therapy with modified release HC in patients with adrenal insufficiency confers significant improvements in HRQoL compared to immediate release HC. This is reflected in the patient preference for MR-HC.

**P42 Management of inpatient hypoglycaemia in St Michaels Hospital; a prospective audit**

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Hypoglycaemia is a potentially life treating emergency that can be avoid if treated correctly. The inpatient management guidelines for hypoglycaemia in St Michaels Hospital were published in 2017 and no audit of the compliance to this guideline has been done to date. We prospectively reviewed all inpatient cases of hypoglycaemia (capillary blood glucose of 3.9mmol/l or less) in St Michaels Hospital medical wards from the 15/9/2018 to the 4/11/2018. All diabetic inpatients glucose records were reviewed daily for episodes of hypoglycaemia. Data was recorded on datasheets and uploaded to the Sphinx programme for analysis. 37 episodes of hypoglycaemia were recorded in 30 patients (m:f 17:13). 70% of events had a CBG of 3.9-3.1mmol/l and the median age was the 71-90 group, reflecting the demographic of the hospital. Fast acting oral glucose was the most commonly used treatment (n=28), while in 6 episodes no treatment was given. For 16 episodes a CBG was not rechecked at 15 minutes and in only 13 episodes was a long acting carbohydrate given once the hypoglycaemia had resolved. This audit highlighted 3 main issues; 1. Lack of monitoring post treatment of hypoglycaemia 2. In 16% of cases no treatment was given 3. In the majority of cases a long acting carbohydrate wasn’t given to help prevent further hypoglycaemic events. In response to the audit the unit provided target education to NCHDs and nursing staff. We are undertaking a review of our insulin kardex and reviewing our hypoglycaemia policy. We plan to re-audit in 2020.

**P43 Case report: a case of ectopic Acromegaly in the setting of a GIST**

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A 42 year old woman who was referred with an 18 month history of polyarthralgia, amenorrhea and 8kg weight gain. She had prognathism and prominence of supraorbital ridge, increase in shoe size and enlargement of the hands consistent with acromegaly. IGF-1 was 1,172 ug/l (103-310). 75g oral glucose tolerance test confirmed acromegaly with a nadir growth hormone (GH) of 47.12ng/ml and diabetes mellitus. An urgent pituitary MRI was normal. CT Thorax, Abdomen and pelvis showed a 14 cm gastric antral mass consistent with Gastrointestinal stromal tumour (GIST) and 2.3 cm nodule inferior to the left adrenal gland, raising the possibility of Carney-Stratakis syndrome (GIST and paraganglioma). FDG PET scan showed uptake in the gastric antrum, but not in the infraadrenal nodule. Plasma metanephrines were normal and GHRH was undetectable. A biopsy showed features consistent with an epitheloid GIST. The patient underwent surgery, including excision of the biopsy track. The antral mass histology was of PT4N0 GIST with Ki67 20% and PDGFRA c.2525A>T mutation. The nodule was consistent with Adrenocortical adenoma. Immunohistochemistry of both lesions was negative for GH. Post-operatively symptoms resolved and hyperglycaemia returned to normal, with nadir GH on OGTT of 0.16ng/ml. IGF-1 level normalised to 212 ug/l. This is an unusual case of growth hormone excess which resolved after the removal of the GIST and adrenal adenoma, without identification to date of the source of GH or GHRH.

**P44 Bone health status of professional Irish jockeys**

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Elevated fracture risk and long-term bone health are of concern for the horse racing industry with previous research reporting a high incidence of poor bone health in professional jockeys. Nutrition and exercise initiatives have been implemented over the last 10 years however little is known about the current bone heath status of Irish jockeys. The aim was to provide a comprehensive update on bone health in professional Irish jockeys. Eighty-five professional male jockeys (flat n=35 and national hunt (NH) n=50) completed a dual-energy X-ray absorptiometry (DXA) scan for the assessment of bone mineral density at the spine and hip. Z-scores were interpreted with differences between licence types identified using a t-test. Flat jockeys (age 25.9±9.0 years, body mass 55.7±3.3 kg) were significantly lighter (p<0.05) than NH jockeys (age 26.5±6.0 years, body mass 65.5±4.0 kg). A Z-score ≤-1 for spine and hip was displayed in flat (50% and 40%, respectively) and NH (34% and 20%, respectively). Flat jockeys had significantly lower spine Z-scores compared to NH (p<0.05). As defined by the international society for clinical densitometry (ISCD) `low bone density` (Z-score ≤-2) was displayed at the spine in 14.3% of flat jockeys compared to 10% in NH. No differences were seen in hip Z-scores between jockey groups. A large proportion of jockeys still display poor bone health. Given the high risk nature of the sport jockeys are a vulnerable population with an increased fracture risk. Further intervention strategies are required to support the development of optimal bone health in professional jockeys.

**P45 Case report: a case of Panhypopituitarism secondary to ipilimumab and nivolumab**

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A 75 year old man presented with metastatic melanoma in 2019. The patient was commenced on ipilimumab and nivolumab. Prior to this therapy, he had no history of endocrine dysfunction. Subsequent to the first cycle of his treatment, thyroid function tests were performed and revealed central hypothyroidism with TSH 0.16 mU/l (0.27-4.2), fT4 7.8 pmol/l (12-22) and fT3 2.3 (3.1-6.8) pmol/l. He was commenced on thyroxine replacement. Treatment continued and the patient developed malaise, nausea and vomiting. He was reviewed on the Oncology Day Ward for symptomatic hyponatraemia, (Na+ 123mmol/l) and infused with 1L 0.9% saline. Four days later he deteriorated and urgent endocrine opinion was requested in view of Na+ 110mmol/l, urinary Na+ 77mmol/l and urinary osmolality 514mmol/kg. Three boluses of 150ml 3% hypertonic saline in addition to intravenous hydrocortisone were given. Cortisol level later proved to have been 75nmol/l. A diagnosis of panhypopituitarism was made: ACTH <3.0ng/l (7-63), IGF-1 53ug/l (47-207), FSH 3.4U/l (2-12), LH 1.3IU/l (2-9) and testosterone 10nmol/l (6.7-25.7). MRI pituitary was normal. Hypophysitis is a known side effect of ipilimumab and nivolumab. This case report highlights the importance of checking endocrine function in patients treated with ipilimumab and nivolumab. It also illustrates the unmasking of hypopituitarism when thyroxine replacement therapy is initiated and metabolism rate increases. A thyroid function pattern suggestive of central hypothyroidism should raise the suspicion of pituitary dysfunction and prompt testing of other pituitary hormones. This patient required multiple boluses of 3% saline to achieve aquaresis.

**P46 Does Gait Speed Correlate with Cognitive Function in Midlife Type 2 Diabetes ? Results from the ENBIND Study**

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Type 2 Diabetes (T2DM) in midlife is associated with a greater risk of dementia in later life. The longitudinal ENBIND Study is examining novel approaches to biomarker discovery in this high-risk group which may help identify those at greatest risk. We recruited 65 otherwise healthy (no micro/macrovascular complications) participants with T2DM (51.9 +/- 8.4 yrs) and 30 matched controls (52.3 +/- 7.9 yrs). Following detailed health, diabetes, general cognitive (MoCA) and computerised neuropsychological (CANTAB) assessment, gait was assessed by stopwatch and accelerometers across several tasks. Specifically, gait speed was assessed under self-selected, maximal and dual-task cognitive (reciting alternate levels of the alphabet) paradigms. Controlling for demographic and cardiovascular covariates, T2DM was associated with a lower MoCA score, slower self-selected, fast and dual-task gait speed (all p<0.05). Fast (p =0.006) but not self-selected gait speed (p =0.47) was associated with poorer cognitive function. Both T2DM and lower MoCA score were independently associated with a poorer dual-task cognitive performance (p<0.001, p= 0.003). Overall, performance in the lowest vs highest quartile on the dual-task paradigm was associated with a significantly poorer performance on the MoCA which persisted after controlling for relevant covariates (p<0.001; 27 vs 29). On multivariate analysis, higher CRP levels were associated with slower fast (p =0.041) and dual-task (p=0.033) gait performance. The current study found that gait speed, and in particular dual-task gait speed with a cognitive task strongly correlate with cognitive decrements in midlife T2DM. Future work will tease out the specific domains of gait and cognition which are affected, and assess longitudinally in this high-risk group.

**P47 Core Outcome Sets for Gestational Diabetes Prevention and Treatment: A Study Protocol.**

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Selective reporting bias, inconsistency in chosen outcomes between trials, and irrelevance of the chosen outcomes to women limit the efficiency and ability to synthesise research studies for interventions for the prevention and treatment of gestational diabetes mellitus (GDM). We aim to address these challenges by developing core outcome sets (COSs), which represent a minimum set of outcomes to be consistently measured and reported in relevant studies. This is a three-phase project consisting of: (i) a systematic review of the literature to identify outcomes that have been reported in trials and systematic reviews of trials of interventions for the prevention and treatment of GDM. A staged systematic review has generated 135 unique studies from which reported outcomes were extracted. A staged approach using time limitations until outcome saturation was reached generated a comprehensive list of outcomes in an efficient manner. (ii) a three-round, web-based Delphi survey with key stakeholders.

This will facilitate prioritisation of these outcomes. Participants will represent three broad groups: pregnant women at risk of GDM, with GDM, or women with a previously history of GDM; healthcare professionals who care for women with GDM and their offspring; researchers and policy makers with an active interest in the prevention and treatment of GDM.

(iii) a consensus meeting to discuss and agree on two final lists of outcomes. These final outcomes will constitute the COSs for treatment and prevention of GDM. The two proposed COSs should be measured in all trials evaluating the effectiveness of interventions for GDM prevention and treatment.

**P48 Glucagon like peptide 1 analogues treatment in diabetic patients attending St Michael`s and St Vincent`s Hospitals.**

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An audit was conducted to assess adherence to international guidelines that Glucagon like peptide 1 analogues should be discontinued after six months of treatment if no beneficial metabolic response achieved, ie 3 % reduction in body weight or 11 mmol/mol reduction in HBA1c. We collected retrospective data from the hospital diabetes database. 81 patients identified who had received liraglutide for at least 6 months. HBA1c and body weight; pre- and post-treatment for 6 months were recorded. Adherence to guidelines was observed in two groups. Eighteen percent benefited from liraglutide treatment and met metabolic response target; these continued treatment appropriately. Eleven percent did not benefit from liraglutide and appropriately discontinued treatment. Failure to adhere to guidelines was clear in two sub- groups. Thirty one percent of patients continued liraglutide without evidence of satisfactory metabolic response. Eight percent who achieved target discontinued treatment. No 6 month follow up was recorded in 32%. Appropriate follow up of patients would decrease cost of treatment (€156.5/ month) as well as unnecessary exposure to side effects.

**P49 Review of a single centre’s diabetic retinal screening results and associated patient characteristics.**

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Diabetic retinopathy (DR) affects significant numbers of patients with diabetes mellitus. A possible protective effect of statins against development of DR has been proposed. The aim of this study was to compare characteristics of patients with or without DR attending a secondary care centre. A retrospective analysis of consecutively-returned retinal screening results was performed. Data collected included: type of diabetes; stage of retinopathy; average HbA1c (over up to 5 years); statin use; diagnosis of hypertension. A total of 288 patients were included of whom 65.4% were male, 84.4% had type 2 diabetes (T2D) and 11.5% had type 1 diabetes (T1D). Mean (±SD) HbA1c was 57.4 (±13) mmol/mol. Retinopathy was detected in 84 (29.2%) patients of whom the majority (91.7%) had background retinopathy. Retinopathy was more prevalent in T1D than in T2D (63.6 vs 24.7%, p<0.001). Mean (±SD) HbA1c was significantly lower in those without DR, 54.6 (±10.9) vs 64.3 (±15.2) mmol/mol (p<0.001). Mean HbA1c was 63.7(±15.1), 75.9 (±8.8), and 68.2(±22.7) mmol/mol for background, pre-proliferative and active proliferative DR respectively. There was a trend to fewer patients in the DR group being on statins (68.0% vs 75.5%), odds ratio for DR on statins 0.666 (p0.167). This study of our patients with and without DR demonstrates a higher prevalence of DR in T1D than in T2D, confirms the known association of DR with poorer glycaemic control, and demonstrates a trend to lower DR rates with statin treatment but no difference in prevalence of hypertension between those with and without DR.

**P50 Rapidly enlarging abdominal mass in a patient with phaeochromocytoma: a case report**

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A 31-year-old male was referred for investigation of hypertension. Aside from occasional headaches, he was well. Blood pressure was 160/90mmHg; examination was otherwise normal. Markedly elevated urinary metanephrines confirmed a biochemical diagnosis of phaeochromocytoma. CT revealed a right adrenal lesion. Pre-operative alpha- and beta-blockade were followed by an uncomplicated laparoscopic adrenalectomy. Histology confirmed a phaeochromocytoma with a Phaeochromocytoma of the Adrenal Gland Scaled Score (PASS) of 7. Follow up at 6 and 12 months, including biochemical and radiologic surveillance, showed no tumour recurrence. At 2 years post-adrenalectomy the patient complained of abdominal swelling, increasing over weeks. Examination revealed a firm, non-tender right iliac fossa mass. CT confirmed a heterogeneous mass measuring 11.5cm x 9.3cm, concerning for phaeochromocytoma recurrence. The mass was non-MIBG-avid, and catecholamine levels were normal. Serum β-HCG was markedly elevated at 92,830 IU/L (<0.6IU/L). Testicular ultrasound visualised a right testicular mass. Biopsy of the abdominal mass confirmed metastatic disease, determined to be a non-seminomatous germ cell tumour. Four cycles of neo-adjuvantchemotherapy were followed by surgical tumour resection, retroperitoneal lymph node resection and right sided orchidectomy. This case details the co-occurrence of two rare, histologically unrelated cancers. Patients with high-risk pheochromocytoma require close monitoring for metastasis and recurrence, but unrelated pathology should be considered in those who re-present with a suspicious lesion. This case highlights the importance of multidisciplinary input when dealing with cancer patients, and the importance of keeping an open mind when dealing with discrepant or surprising results in clinical practice.

**P51 Incidence of hyponatraemia in a cohort of newly diagnosed lung cancer patients**

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Hyponatraemia is one of the most common electrolyte disturbances associated with malignancy and is associated with increased morbidity and mortality. Previous studies suggest that hyponatraemia is observed in 15% of patients with small cell lung cancer (SCLC) and 1% of patients with non-small cell lung cancer (NSCLC) at presentation1. This study was undertaken to determine the incidence of hyponatraemia in a cohort of newly diagnosed lung cancer patients in the West and North West of Ireland. A retrospective review was conducted. Prospectively collected data on 134 consecutive patients, with newly diagnosed lung cancer, between January and July 2018 was analysed. Variables recorded included serum sodium at presentation, age, sex, histological diagnosis, treatment regimen, date of death.The mean age of patients was 69.0 years (+/-11.0) and 64% of patients were male. The most common histological diagnoses were adenocarcinoma (48.5%), squamous cell carcinoma (26.9%) and small cell lung cancer (5.2%). In this cohort, 42.9% of patients with SCLC and 17.8% of patients with NSCLC had hyponatraemia (plasma sodium (pNa) <135 mmol/l). Although the majority of patients (60%) had mild hyponatraemia (130-135 mmol/l), the presence of pNa < 135mmol/l, was associated with a significantly increased risk of mortality (Odds Ratio 4.7, p<0.002). Hyponatraemia is not uncommon in *both* SCLC and NSCLC and serves as an important factor in the prognosis of lung cancer.

**P52 The reproductive phenotype of an adult cohort of patients with Prader- Willi Syndrome attending a single centre.**

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Prader-Willi syndrome(PWS) is a neurodevelopmental disorder characterised by absence of paternal-imprinted genes in chromosome 15q11-13; prevalence 1:15,000-1:30,000. Varying degrees of primary and secondary hypogonadism are reported in childhood and adolescence, but limited data exists regarding the adult reproductive phenotype. This was a retrospective review of 39 adult(25 female) PWS patients attending a single centre. Mean(range)ages were female 29(19-56)y; and male 27(18-57)y. Two males were longer alive at the time of review. Information regarding reproductive phenotype was available in 24 female and 10 male patients. Of the 24 females, 17 had primary amenorrhoea associated with hypogonadotropic hypogonadism, 6 of whom were on oestrogen±progestagen replacement as OCP(n=1), HRT(n=4) and oestrogen-only(n=1). Two had discontinued oestrogen; one due to weight gain and distress, the second increasing age. Fifteen of these 17 underwent LHRH testing (at mean-age 14years); 6 had pre-pubertal, 4 normal, and 5 discordant FSH and LH responses. Five underwent menarche; a sixth had vaginal bleeding due to endometrial hyperplasia despite biochemical evidence of hypogonadotropic hypogonadism. This patient and one other (BMIs 75.5Kg/m² and 55.3Kg/m²) have menorrhagia. Of the 10 males, 4 had hypogonadotropic hypogonadism; 2 primary hypogonadism; 4 had spontaneous puberty. Three had a history of undescended testes requiring surgery. None were on testosterone therapy; in 4 cases, it had been discontinued(n=2) or not initiated(n=2) due to aggressive behaviour. Hypogonadism is common and usually hypogonadotropic, in PWS adults. The majority of hypogonadal patients, male and female, were not receiving hormone replacement. Endometrial hyperplasia is a potentially unrecognised concern particularly in overweight patients.

**P53 Audit of recording and management of metabolic and endocrine variables in adult patients with Prader-Willi Syndrome attending a single centre.**

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Prader-Willi syndrome(PWS) is a neurodevelopmental disorder characterised by absence of paternal-imprinted genes in chromosome 15q11-13; prevalence 1:15,000-1:30,000. It is likely that the adult phenotype is changing due to changes in paediatric practice including intensive intervention to limit weight gain, and widespread use of sex steroid and growth hormone replacement. Although most patients now live into adult life the majority of published data is from paediatric populations. This was an audit of management of metabolic and endocrine features in PWS adults according to expert consensus guidelines; the adult cohort attending the department has increased by 69% since last reviewed in 2017. We studied 39(25 female) patients with PWS; mean(range)age 28(18-56)years; BMI 41(19-118)kgm². One male died aged 23y in 2017.Ten of 35 with available data had diabetes; 6 of 34 hypertension. Five of 28 had elevated total cholesterol; 4 of 26 elevated LDL-C; 14 of 27 low HDL-C; 8 of 28 were hypertriglyceridaemic. Seven of 32 were hypothyroid. Twenty-two of 32 received Growth Hormone in childhood; 13 of 31 in adulthood. Twenty had documented normal hypothalamic-pituitary-adrenal axis; 5 had insufficient peak cortisol on dynamic testing.Of 21 with DEXA imaging, 7 had osteoporosis (3 on HRT, 1 on Denosumab) and 4 had osteopaenia. Twenty-one of 28 had sufficient (>50nmol/L) Vitamin D levels. Endocrine and metabolic disorders, particularly diabetes, dyslipidaemia and osteoporosis/ osteopaenia, are common in adults with PWS and recording of these variables is incomplete. A dedicated clinic is being established for PWS adults to improve data collection and standardise management.

**P54 Barriers to accessing insulin pump therapy by adults with type 1 diabetes in Ireland: initial findings from a qualitative study**

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There is low uptake of and geographical variation in continuous subcutaneous insulin infusion (CSII) therapy for adults with type 1 diabetes (T1D) in Ireland. The aim of this study was to explore barriers to accessing CSII in Ireland. Qualitative, semi-structured interviews with health-care professionals (HCPs: consultants, diabetes nurse specialists, dietitians, insulin pump educators), policy-makers and patient advocates were completed. Interviews were transcribed verbatim, coded and analysed using the principles of thematic analysis. There was agreement that uptake is “disappointing” and that it should not be determined by the “post-code lottery”. Many barriers to accessing insulin pump therapy in Ireland were identified. Most were related to: i) system insufficiency (i.e. “staffing resources”, e.g. “insufficient numbers” of nurse specialists, dietitians and consultant endocrinologists, “clinic work overload”, “lack of training” and “exposure” to insulin pump therapy); ii) individual beliefs and characteristics of a) HCPs (their “attitudes,” “enthusiasm” towards T1D, interest in diabetes vs. endocrinology, acceptance of modern treatments, “lack of leadership” and being a “gatekeeper” towards technology) and b) patients (their “motivation”, “level of education”, “awareness” and “exposure within the clinic”). It was felt that patients “highly motivated, educated and understanding its benefits will access CSII, even if their clinic is reluctant” to offer it. “Lack of exposure” seems to be determined geographically, be related to the clinic’s ability to provide care for patients currently on CSII or to commence CSII, and their size. These data are important to inform policy makers, so that improvement in uptake can be achieved.

**P55 Severe Salt Wasting Syndrome due to spontaneous Epidural Haematoma**

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Salt wasting syndrome is a rare cause of neurosurgical hyponatremia, thought to occur due to BNP-mediated natriuresis, leading to hypovolemic hyponatraemia. A 31 year old male developed acute-onset polyuria and hyponatremia (plasma sodium (pNa) 122mmol/L) 24 hours after decompressive laminectomy for a spontaneous epidural haematoma at C7-T3. Urine sodium concentration was 205mmol/L, urine osmolality 614mOsm/kg, BNP 2483pg/ml(RR 0-97) and urine output (UO) 8.5 liters/day, in keeping with a diagnosis of salt wasting syndrome. Aldosterone and renin were low, despite hypotension. 3% saline infusion was commenced, and vasopressin, noradrenaline and 0.9% saline continued for management of spinal shock. On day 3, vasopressin infusion was stopped, resulting in a rapid aquaresis, and rise in pNa of 16mmol/L in 4 hours. 3% saline was held to allow pNa to drop to prevent over-rapid correction, and vasopressin was restarted. BNP fell to normal over seven days, but he remained polyuric (6-14 liters/day) and hyponatraemic. Oral fludrocortisone and dDAVP were commenced on days 12 and 14, UO fell to 4-6 liters/day. Subsequently, indomethacin was introduced to decrease GFR. Over the next three weeks dDAVP was weaned down to stop and pNa normalised. He was discharged back to the referring hospital after 10 weeks.

This case illustrates two discrete pathophysiological mechanisms of dysnatremia post-spinal injury (a)BNP-mediated natriuresis leading to hypovolemia, with lack of compensatory action of renin-angiotensin-aldosterone system, and (b)lack of baroregulated vasopressin release. Targeting these physiological derangements was challenging and required volume repletion, fludrocortisone, plus dDAVP, in order to reduce urine volume and normalise pNa.

**P56 Endoscopic transsphenoidal surgery for Cushing’s Disease; a single surgeon experience**

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Transsphenoidal surgery (TSS) to resect a corticotroph adenoma is the first-line treatment for Cushing’s disease (CD); the aim of this study was to assess outcomes of endoscopic TSS (ETSS) for CD, performed by a single surgeon. Thirty-three ETSS were performed in 31 patients with CD between January 2012 and March 2019. Patients with previous TSS prior to the study period were excluded. 77% were female, median age 37 (8-75) years. Pre-operative tumour localisation was determined on MRI in 19 patients; 16 microadenoma and 3 macroadenoma (1 with cavernous sinus invasion). 84% underwent IPSS. Postoperative remission rates for initial surgery were 87% (27/31) when Endocrine Society cut-offs were used (AM serum cortisol <138 nmol/l within 7 days post-op) and 89% (25/28) in patients with a microadenoma/hyperplasia. Using a stricter cut-off of day 3 cortisol <50 nmol/L, overall remission rate was 60%. There was no statistical difference in rates of remission in those patients with or without tumour target on pre-operative MRI (17/19 vs 10/12, p=0.6). Post-operatively, rates of transient and permanent DI were 35% and 23%, respectively. There were four cases of TSH deficiency, and three cases of gonadotrophin deficiency. There were no cases of recurrence of CD; seven patients recovered their HPA axis, at a median (range) follow-up of 15 (1-79) months. In this series, remission rates post-ETSS for CD compare favourably with published international results, when Endocrine Society criteria are used. One in 5 patients developed permanent DI. Longer follow-up is required to determine recurrence rate.

**P57 An audit of inpatient hypoglycaemia management in a university teaching hospital with a dedicated insulin management round.**

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In our hospital, the endocrinology team conducts a daily ‘insulin management round’ (IMR) for all diabetes inpatients. Inpatient hypoglycaemia is associated with significant morbidity, mortality, increased length-of-stay and expense. We retrospectively analysed the incidence and management of hypoglycaemia detected on the IMR over a twelve-day period as benchmarked against our hypoglycaemia protocol. Hypoglycaemia was defined as point-of-care (POCT) glucose readings <4 mmol/L.41 patients were referred to the IMR (representing 97% of inpatients prescribed insulin). Four patients were excluded (ITU). Data are presented as mean±SD. Mean age was 65±18 years. 76% were male. 19% had type 1 diabetes (T1DM), 65% type 2 diabetes (T2DM), 11% were transplant-related, 5% were other (cystic fibrosis, steroid-induced.) 57% were under medical care, 27% under surgical care and 16% under endocrinology care. 46% of T2DM patients were also prescribed oral hypoglycaemic agents (OHA). 35 incidences of hypoglycaemia among 37 patients were captured over a 12-day period. 43% of events occurred in T1DM patients. 51% amongst T2DM patients- one hypoglycaemic event included treatment with OHAs. 6% amongst transplant-related diabetes patients. 49% of events occurred on the endocrinology service, reflecting the complexity of patients under endocrine care. 83% were treated correctly with 170ml of Lucozade. POCT recheck times were poorly recorded. 17% of episodes had no documentation of treatment. Following these incidents the IMR made appropriate changes to insulin dosing in 66% of cases. In conclusion hypoglycaemia is appropriately managed according to our protocol. Documentation requires improvement. The IMR supports effective in-patient diabetes care. Ongoing education is paramount.

**P58 A rare case of sellar aneurysms and a macroprolactinoma**

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Background: The existence of a sellar aneurysm and a pituitary macroadenoma is very rare and can cause diagnostic perplexity. We report herein a case of two sellar aneurysms and a macroprolactinoma in one patient. Case: A 65-year old male presented with a severe headache associated with nausea, vomiting and diplopia. Physical examination was significant for high BP and right 6th nerve palsy with no visual field defects. Non-contrast brain CT showed large hyperdense seller mass measuring 4.3x4.4 cm extending to the suprasellar region, cavernous sinuses bilaterally (right>left) and to the sphenoid sinus. Dedicated pituitary MRI and CT angiography revealed two large aneurysms, 6mm apart, arising from the cavernous right ICA displacing a pituitary macroadenoma that measured 1.5x1.2x2.0cm to the left. There was no apoplexy. Serum prolactin was 47,105 mIU/L (56-278) consistent with macroprolactinoma. Investigations revealed hypogonadotropic hypogonadism and ACTH deficiency. TFTs and IGF-1 were normal. He was commenced on hydrocortisone replacement and dopamine agonist therapies. Coiling of the aneurysms was carried out. Prolactin level normalised with a significant reduction in the size of the macroprolactinoma, his gonadal axis started to recover, and the 6th nerve palsy is gradually improving. However, he remains on hydrocortisone as he failed the repeat SST. Conclusion: When a pituitary lesion presents with atypical features such as cranial nerve palsy, careful imagining is required to rule out other pathologies. In our case, the patient notably had two pathologies that required different treatments. All such cases require multidisciplinary input.

**P59 Multiple endocrinopathies in a patient treated with immune checkpoint inhibitors**

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Background: Immune checkpoint inhibitors have revolutionised cancer therapy. However, endocrinopathies particularly affecting the thyroid and the pituitary have been reported. Case: We describe a case of 46-year old female treated with ipilimumab/nivolumab combination therapy for metastatic melanoma. After the last dose of combination therapy, she was admitted with lethargy, weight loss, dizziness, nausea, palpitations, and tremors. Investigations revealed TSH: <0.01 mIU/L (0.38-5.33), FT4: 66.9 pmol/L (7-16), negative TRab and TPO antibodies, corrected calcium: 3.54 mmol/l (2.2-2.5), PTH: 9 pg/ml (10-65). PTH-related protein and active vitamin D levels were normal. Cortisol pre-cosyntropin: 11 nmol/l and 30 minutes post-cosyntropin: 38 nmol/l without a rise in ACTH and normal renin. MRI pituitary was unremarkable. Cross-sectional imaging and bone scan showed no metastases but evidence of pancreatitis with normal glucose. Her thyrotoxicosis resolved over time without specific treatment, which is consistent with Nivolumab-induced thyroiditis. Calcium normalised with initial treatment and remained normal after six months of follow up. Her ACTH deficiency persisted, and she is maintained on oral hydrocortisone. Immunotherapy was continued given her excellent tumour response. Conclusion: This is a remarkable case in which ACTH deficiency (probably hypophysitis), thyroiditis, hypercalcaemia and pancreatitis developed in the same patient on ipilimumab/nivolumab combination. We postulate that the hypercalcaemia was secondary to a combination of hyperthyroidism and hypoadrenalism.

**P60 Point of care thyroid ultrasound (POCUS) in endocrine outpatients: a pilot study**

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Background: Point of care thyroid ultrasound (POCUS) by trained non-radiologists has the potential to reduce cost, expedite diagnosis and enhance patient satisfaction if embedded in an outpatient endocrine clinic setting. Aim: To perform a pilot of POCUS in an endocrine outpatient setting. Methods: Thyroid ultrasound was undertaken by an endocrinologist (PCJ) with consultant radiologist supervision (PKE). A GE Logic e7 portable thyroid ultrasound machine with 12 MHz linear probe was used. Results: Thyroid ultrasound was performed on 40 patients (M:10,F30), mean age 52 years, range 23-77 years, median follow up 14 months, range 6-18 months. Twenty scans were performed to assess thyroid nodules, 13 for investigation of a goitre and the remaining 7 were for patient preference. 39 patients had benign thyroid disease, 1 patient had a confirmed newly diagnosed papillary thyroid carcinoma (PTC). The ultrasound ‘U’ classification was U1 and U2 (n=37), U3 and above (n=3). Fine needle biopsy (FNA) was performed on 9 patients with one confirmed as a thyroid carcinoma (Thy1;n=2, Thy2 n=6 and Thy 5;n=1). Thyroid ultrasound reporting was concordant between radiologist and non-radiologist (p< 0.01). Time to scan was reduced during the pilot from the existing model (n=40) of a mean of 52 days (range 7-95 days) to 1 day (p<0.01).

Conclusion: In low risk patients, with appropriate training and radiology supervision, POCUS can be performed accurately and safely in outpatients by an endocrinologist. There are potential benefits in terms of cost savings, time to scan, reduction in clinic visits, and in expediting diagnosis.

**P61 Survey on the use of information technology system in the management of diabetes**

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We conducted an online survey to understand information technology (IT) systems available at diabetes clinics in Irish hospitals.  A link to a web-based questionnaire comprising 13 multiple choice questions was sent to all IES members. Twenty members completed the questionnaire. Fourteen (70%) of the participants were consultant endocrinologists: 4 (20%) were registrars and 2 (10%) were senior house officers. Diabetes clinic management software used at the various hospitals included: Diamond (n=4); Cellma (n=1); and Tymax (n=1). Forty-five percent of participants spend 0-30 minutes on dictation per clinic: 35% spend 31-60 minutes; and 15% spend 61-90 minutes. Twenty percent of the participants use diabetes clinic management software that handles e-referrals. Ninety-five percent of the participants would like for diabetes clinic management software to interface with the proposed national diabetes patient register. Eighty percent felt it would be beneficial to be able to configure electronic forms and letters to the individual institution. One hundred percent thought that it would be useful for clinic management software to email securely and automatically the clinic visit letter to the patient's GP. A customisable clinic software package would improve patient care. Such a package could ensure consistent data collection, prompt use of guideline-based interventions and improve clinic efficiency to enable more patients to be seen per clinic. In conjunction with Mdcl Ltd, we have created a software package that facilitates use of easily customisable electronic forms together with associated and easily customisable clinic letters. Captured core data could easily feed into the planned national diabetes register.

**P62 Pituitary pathology and pituitary imaging do not predict response to Somatostatin analogue therapy in patients with acromegaly**

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Introduction: Somatostatin analogues (SSAs) are commonly used to treat acromegaly. However, a considerable proportion of patients will not respond to SSAs. The aim of this study was to evaluate radiological and immunohistochemical factors that may be used to predict responsivness to SSA. Methods: 24 patients with acromegaly were identified from the Irish Pituitary Study. Unlike previous reported studies, patients who received SSAs pre-operatively, were excluded. Immunohistochemistry (IHC) expression analysis for: SSTR2/SSTR5/AIP/DR2/CAM5.2 on formalin fixed pituitary adenoma tissue. Imaging: Adenoma intensity on T2-weigthed MRI. Biochemical analysis: Biochemical control was defined as an IGF-1 less than the ULN and GH<2µg/L. Patients were stratified into 3 categories; responders (normalisation of IGF-1+GH), partial responders (>50% reduction in GH+/-IGF-1) and resistance. Results: 24 patients [10F, 14M; median age 39 years(IQR 34-48)] were analysed. Pre-SSA GH concentrations were 8.4µg/L(5.7-15.4) and IGF-1 %ULN was 2.5(1.8-3.5). Six responders, 12 partial and 6 resistant patients were identified. Pre-SSA T2 weighted images were available in 11/24 patients; (3 hyperintense, 6 iso-intense and 2 hypo-intense). There was no significant difference between responders and resistant patients with regards to SSTR2 (p=0.31), SSTR5 (p=0.9), AIP (p=0.63), DR2 (p=0.58) or CAM 5.2 (p=0.18) expression. We found no difference in T2 signal intensity between responders and resistant patients (p=0.99). Knosp scores were similar in hyperintense and combined iso/hypointense adenomas (p=0.26). Conclusion: This is the first study to combine radiological and IHC data in SSA naïve acromegaly patients. We were unable to identify robust pathological or radiological predictors of response to SSA in this patient cohort.

**P63 Inadequate screening for hereditary haemochromatosis in a diabetes outpatient population**

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Hereditary haemochromatosis (HH) is a common autosomal recessive disease in Ireland that may present with diabetes mellitus (DM). Screening for HH in newly-diagnosed DM permits early diagnosis of HH. Testing for *HFE* mutation is recommended if transferrin saturation (TS) exceeds 45% or if serum ferritin (SF) exceeds >200µg/L for a woman or 300µg/L for a man. Our diabetes database has an entry field for TS. We conducted a retrospective audit of screening for HH (n=156). When there was no record for TS on our database, the laboratory system was searched. In addition, data was collated about *HFE* mutation analysis and about known diagnosis of HH. TS was measured in 89/156 (57.1%), but only 25/156 (16.0%) were entered in the diabetes database. SF result was available on 107/156 (68.6%). Either TS or SF were checked in 120/156 (76.9%). Based on either elevated TS or elevated SF, 11/120 (9%) patients needed *HFE* gene mutation testing: 2 had known diagnosis of HH; 1 had a normal genotype; 1 was a carrier being heterozygous C282Y; 1 was compound heterozygous being C282Y/H63D; and 6 had not been tested. In conclusion, screening for HH in our practice is suboptimal with only 76.9% being screened and with only 45% of positive screening being tested for *HFE* mutation. Recording of results on the diabetes datasheet was inadequate with only 16% having an iron saturation recorded in the designated field.

**P64 Early experience with Semaglutide in Clinical Practice**

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Semaglutide was launched in Ireland in September 2018. SUSTAIN Trials reported its superiority to other GLP-1 Receptor Agonists in terms of weight loss and HbA1c reductions. We sought to evaluate real world experience of Semaglutide in patients with Type 2 Diabetes in St Vincent’s Private Hospital in terms of weight, body mass Index (BMI), glycosylated haemoglobin (HbA1c) and adverse events. The audit commenced in February and finished in May 2019. Twenty patients were evaluated at return clinic visits. Baseline demographics include 75% male, mean age 60yrs (40-79yrs), mean weight 101kg (72-145kg), mean BMI 34.4kg/m2 (27-42kg/m2), mean HbA1c 8.5%/69.4mmol/mol (6.9-11.4%/52-101mmol/mol), mean duration of diabetes 13.1yrs (4-27yrs), and mean duration of GLP-1 therapy 4.6 months (2-7 mths). The 1mg dose was used by 45% and the 0.5mg was used by 55%. Mean weight loss was 3.3kg (0.2-6.5kg) with 0.5mg Semaglutide and 6kg (0.6-13.7kg) with 1mg. Mean BMI reduced by 1.3kg/m2 (0.1-1.9kg/m2)with 0.5mg and 2.2kg/m2 (0.2-5kg/m2) with 1mg. Mean HbA1c reduced by 0.9%/10mmol (0.3%/3mmol-2.8%/31mmol) with 0.5mg and 1.4%/16.2mmol (0.4%/5mmol-2.3%/25mmol) with 1mg. Adverse gastrointestinal events leading to discontinuation of treatment were seen in 4 patients (20%). In conclusion, our cohort had higher baseline mean HbA1c levels than SUSTAIN 1 and were on therapy for a shorter time frame. Weight loss was similar with the 0.5mg dose but superior with the 1mg dose. HbA1c reduction was lower with the 0.5mg dose but comparable to the 1mg dose. A higher proportion of patients discontinued treatment secondary to gastrointestinal side effects.

**P65 Long term outcomes following parathyroidectomy in patients with Multiple Endocrine Neoplasia Type 1; a retrospective cohort study**

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Primary hyperparathyroidism (PHPTH), usually due to multigland hyperplasia, occurs in >90% of patients with multiple endocrine neoplasia type 1 (MEN1). The literature is divided on the optimal surgical management for such patients. We conducted a retrospective cohort study to determine the long-term outcomes associated with limited, subtotal, or total parathyroidectomy as initial surgery for PHPTH in MEN1. The primary endpoint was recurrent PHPTH defined as adjusted serum calcium >2.6mmol/L with elevated or normal serum PTH. Kaplan-Meier curves were constructed for the primary endpoint. Rates of permanent post-surgical hypoparathyroidism (PPSH) were observed and between group differences were assessed using Fisher’s exact test. 39 MEN1 subjects, with mean post-surgical follow-up of 14.4±10.3 years, were included and divided into 3 groups based on the number of glands removed at initial surgery; limited (<3 glands, n=18), subtotal (3/3.5 glands, n=14), and total (4 glands, n=7). The proportions of patients with recurrent PHPTH at last follow-up were 16/18 (89%), 11/14 (79%) and 3/7 (43%) respectively. Median recurrence free survival was 4.6, 9.9 and 30.5 years respectively. Compared to limited parathyroidectomy, both total and subtotal parathyroidectomy were associated with a longer recurrence free survival (p <0.05). Rates of PPSH were higher in the total parathyroidectomy group (4/7, 57.1%) compared to both the limited (1/18, 5.6%) and the subtotal groups (1/14, 7.1%) (p = 0.01). We conclude that total parathyroidectomy is associated with lower rates of recurrent PHPTH and longer recurrence free survival, but higher rates of PPSH, compared to limited parathyroidectomy in MEN1 patients.

**P66 A Novel Ser182Cys Substitution in the Calcium Sensing Receptor Protein is Likely Pathogenic and Consistent with Molecular Diagnosis of Familial Hypocalciuric Hypercalcaemia Type 1**

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A 22 year old woman was referred to endocrinology with asymptomatic hypercalcaemia. Serum calcium had been measured in the context of unrelated symptoms which had subsequently resolved. The patient reported a possible maternal history of hypercalcaemia, but could not provide specific details. Biochemical investigations revealed hypercalcaemia on 3 of 4 occasions with adjusted serum calcium ranging from 2.59–2.80 mmol/L (normal range 2.20-2.60 mmol/L). Parathyroid hormone levels were normal. Urinary calcium excretion was 3.5 mmol in 24 hours. Spot urinary calcium creatinine ratio was calculated at 0.0095. Investigations were consistent with a diagnosis of familial hypocalciuric hypercalcaemia (FHH), prompting genetic testing. Molecular analysis of the calcium sensing receptor (CaSR) gene revealed a heterozygous single base pair substitution, cytosine to guanine, at base pair 545. This resulted in a serine to cysteine substitution at position 182 in the CaSR protein. The patient’s family lived abroad and were unavailable to participate in further analysis. However, Ser182 is evolutionarily conserved and similar mutations have not been reported. Modelling studies using the CaSR crystal structure revealed that the Ser182 residue is located within a densely packed region of the extracellular domain that interacts with multiple residues including Gln164, Ile162, and Ala154. The mutant Cys182 residue is predicted to disrupt the interaction with the nearby Ile162 residue and may influence the Tyr161 and Leu461 residues through effects on Van der Waals interactions. We thus conclude that the novel Ser182Cys substitution is likely to be pathogenic, and consistent with a molecular diagnosis of FHH type 1.

**P67 Retrospective audit of reported mental health issues in a diabetes outpatient population**

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Recognising and treating mental health problems is important in the management of Diabetes Mellitus. As part of a wider project looking at mental health and distress in diabetes in St Vincent’s University Hospital, we looked retrospectively at records of mental health diagnoses in our Tymax database. A total of 195 patients were selected for review from patients who were scheduled to attend clinic between 19/11/2018 and 30/11/2018. There were seven clinics in this time period, including one young adult clinic .The Tymax database was searched for key words; depression, low mood, bipolar affective disorder, hypomanic, manic, anxiety, panic attack, stress, post-traumatic stress disorder, obsessive compulsive disorder, schizophrenia, schizoaffective, eating disorder, bulimia, anorexia nervosa, alcohol misuse/dependency. 36/195 (18.46%) of patients had a keyword identified in their Tymax profile. Of these, 15 patients had ‘depression’ and 8 patients had ‘anxiety’ recorded on their Tymax profile. Two patients had two diagnoses on their profile. Of those that did not attend their clinical appointment (n=52), 13/52 (25%) had a keyword identified in their Tymax profile (p=0.2). This audit shows a significant self-reported prevalence of mental health problems in our diabetes clinics that can potentially affect engagement with the service. We propose to assess patients prospectively using validated mental health screening tools and to establish a formal mental health referral pathway.

**P68 Premature Ovarian Insufficiency: Evaluation of clinical presentation and associations.**

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Premature ovarian insufficiency (POI) is the loss of function of the ovaries before the age of 40. Patients typically present with amenorrhoea, infertility and flushing; biochemistry reveals hypoestrogenism and hypergonadotropism. However, phenotypic characterisation can vary on an individual basis. A number of aetiologies are known; the majority are thought to be autoimmune in nature. The objective was to assess the clinical presentations and associations of POI. A retrospective chart review was performed. Charts of 46 patients attending the endocrinology departments in Cork University Hospital and the Bon Secours Hospital Cork with a diagnosis of POI were reviewed. Anonymised data on demographics, ovarian function, presenting complaints and medical history were collected. Mean age at diagnosis was 34 years (SD=7.8). Clinical presentations included flushing, sweating and decreased mood. Comorbidities included depression and anxiety, with 32.6% (15/46) being previously diagnosed with either. An iatrogenic cause was diagnosed in 8.7% (4/46) due to previous radiotherapy. As POI can fluctuate in the early phase, adequate levels of oestradiol (>40pmol/L) were seen in 13% (6/46) at clinic review and normal levels of follicle stimulating hormone (FSH) (<25IU/L) were seen in 8.7% (4/46). Bone density was low in 10.9% (5/46) before being offered hormone replacement. Most patients with POI, present with amenorrhoea, flushing, and/or infertility. Biochemistry confirming this diagnosis includes elevated FSH and low oestradiol. Patients with pre-existing autoimmune diseases have an increased risk of developing POI. Frequently, no cause is found. Early diagnosis is important to allow oestrogen replacement to be offered to protect bone health.

**P69 Thyroid dysfunction screening in type 1 diabetes in St Vincent University Hospital.**

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Patients with diabetes mellitus are at an increased risk of thyroid disease and up to a third of patients with type 1 diabetes (T1DM) ultimately develop thyroid dysfunction (1). NICE guidelines recommend measuring TSH levels in adults with T1DM at annual review (2). The aim of this audit was to assess practice in regards to thyroid function screening in type 1 diabetes. Patients with T1DM were identified from the hospital database; those with a diagnosis of thyroid dysfunction or an abnormality on thyroid function tests in the time before the last year of attendance, were excluded. A random sample of 100 was taken from the remaining patients. The last two (6 monthly) follow up visit records were examined. 75% had more thyroid testing than required under NICE guidelines – either full TSH, T4, T3 testing or testing twice / year. Thyroid function was not assessed in 12%. No new thyroid dysfunction was detected in those who had thyroid assessment during the audit timeline. This audit suggests that thyroid dysfunction does not evolve quickly in patients with T1DM who had previously normal TFTs and that perhaps testing interval could be extended. Use of the NICE guideline could reduce unnecessary testing and reduce laboratory costs.

**P70 Diabetic Foot Ulcer Care in Royal Victoria Hospital- A need for improvement**

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A recent province-wide audit identified a diabetic foot ulcer prevalence of 3%. While NICE guidance has stressed the need for early identification and intervention, many patients present late and require admission. Upon admission, prompt expert assessment is also recommended but in the absence of clear pathways, delays after admission are also apparent. N Ireland is soon to implement a Diabetes Foot Pathway from screening to tertiary level care. The aim of our audit is to gather clinical and admission details on patients admitted with diabetic foot ulceration on to the endocrine ward in the Royal Victoria Hospital prior to implementation of the Foot service. Twenty-nine patients (M:F 26:3, age range 33-89, median 59) were entered into our data collection. The average duration of diabetes was 21 years (range 4-53 years), with average HbA1c 75 mmol/mol. All 29 patients had 1 or more other macro/microvascular diabetic complications. 14 patients self-presented to ED with the remaining patients referred by podiatry, GP or outpatient clinics. All patients had inpatient podiatry input, 18 vascular, 3 orthopaedic, and 6 both orthopaedic and vascular input. All received appropriate antibiotics. Additionally, 11 patients had amputations. Surgery was frequently delayed, usually due to either a delay in accessing interventional radiology or theatre space. The median length of stay was 13 days (Range 5days -2 months). In summary, many patients presented late to ED with advanced infection. Appropriate specialist input occurred but investigation and treatment was often delayed. Implementation of a Diabetes Foot Pathway should address many of these issues.

**P71 What’s a “normal” HbA1c test?**

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In healthy people HbA1c values between 20-42mmol/mol are considered normal. Since 2010, HbA1c assays in Irish laboratories are fully metrologically traceable to the International Federation to Clinical Chemistry (IFCC) standard. The IFCC established HbA1c reference interval (RI) is 29-38 mmol/mol. This study aimed to establish RIs for HbA1c in a healthy Irish adult Caucasian population. This cross-sectional study included 208 non-pregnant apparently healthy volunteers. Baseline demographics, anthropometric and laboratory measurements were recorded. Following informed consent, whole blood was drawn into potassium ethylenediaminetetraacetic acid anticoagulant for the quantitative analysis of HbA1c using capillary zone electrophoresis and ultra violet detection on the Sebia Capillarys 3 automated analyser. Inter-assay precision was <2% at a mean HbA1c concentration of 36 mmol/mol and 71 mmol/mol. Mean assay bias was <2% at IFCC target HbA1c values of 26, 48, 116 and 127mmol/mol respectively. Reference intervals (2.5th and 97.5th percentiles) and median were defined according to the IFCC recommended method. Of 208 apparently healthy volunteers, 76 failed to meet the study inclusion criteria. The reference population comprised of 132 participants (females: n=65) with a mean age of 33.4(SD±11.53) years. The RI defined for HbA1c was 27-38 mmol/mol. The importance of the reference population characteristics to the quality of the reference interval (RI), a key decision support tool in laboratory medicine, is often underappreciated. Normative intervals robustly defined for HbA1c in a healthy Irish population were almost identical to that established by IFCC and should be adopted to ensure appropriate result interpretation and management of people with diabetes.

**P72 Case report of a homozygous Kisspeptin 1 receptor (KISS1R) mutation causing hypogonadotropic hypogonadism in an Irish family.**

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A 16 year old female was referred to the endocrinology clinic with primary amenorrhea and failure to initiate puberty. She had a normal birth, developmental history and no other medical illness. Interestingly her eldest sister, age 24, was taking an oral contraceptive pill which was initiated at the age of 17 for induction of bleeding. Her brother, age 18, was on monthly testosterone replacement to treat short stature and delayed sexual development. She had one other sister age 23 who had normal pubertal development and regular menstrual cycles. Siblings excluded, there was no family history of fertility problems or any history of consanguinity. She had reached her normal height potential and had a BMI of 22kg/m2. There were no syndromic features and sense of smell was normal. She was at Tanner stage I for breast development. Investigations showed a low FSH and LH, 1.6IU/L and 0.5IU/L respectively with an undetectable oestradiol. LHRH stimulation test resulted in suboptimal LH response. Other baseline pituitary hormone tests were normal as was imaging of her pituitary gland. Genetic testing revealed a homozygous mutation of KISS1R gene (c.1195T>A) in all three siblings. Both parents were found to be carriers indicating an autosomal pattern of inheritance. This mutation is relatively rare, accounting for about 2% of the normosmic idiopathic hypogonadotropic hypogonadism. Management involves pubertal induction followed by hormone replacement therapy and fertility treatment as desired. Although ovulation induction is feasible there are limited reports on successful pregnancy outcomes.

**P73 Hypercalcaemia associated with Chronic Liver Disease**

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Hypercalcaemia is generally caused by primary hyperparathyroidism or malignancy. However, occasionally more unusual causes need to be considered. A 72 year old gentleman, admitted with decompensation of known alcoholic liver disease (ALD), was noted to be hypercalcaemic. Corrected calcium (CorrCa) was 3.38mmol/L (2.2-2.6) with Parathyroid hormone of 5.6 pg/ml (1.6-6.9), albumin 32 g/l (35-50), Ionised Calcium 1.54 mmol/L (1.1-1.28), phosphate 0.57mmol/L (0.74-1.52), eGFR 47ml/min/1.73m^2 and fractional excretion of calcium 0.0125. Historic CorrCa was elevated.  Family history was negative for endocrinopathy. 25 OH-Vitamin D was 136 nmol/l (on cholecalciferol 800 units once daily). PTH-related peptide was undetectable at <1pmol/L. 1,25-OH vitamin D was 84pmol/l (55-139). QuantiFERON-TB Gold test was negative. Phaeochromocytoma and adrenal insufficiency were excluded. Computed Tomography of Thorax, Abdomen and Pelvis, skeletal scintigraphy and whole-body Positron Emission Tomography were negative for neoplastic or granulomatous disease. Sestamibi scintigraphy and parathyroid ultrasound were negative for parathyroid adenoma. Dual Energy X-ray Absorptiometry revealed osteopenia of left hip.CorrCa remained persistently elevated despite volume expansion, intravenous bisphosphonate therapy and Cinacalcet therapies. Normocalcaemia (CorrCa 2.2-2.6) was achieved with five days of prednisolone. He has had two further admissions with decompensation of ALD and hypercalcaemia. Our case of hypercalcaemia associated with chronic liver disease presents a diagnostic and management challenge. It highlights the extended work-up required to elucidate aetiology. Hypercalcemia secondary to advanced chronic liver disease without hepatoma is uncommonly reported and poorly understood. Defining the underlying mechanisms with this association could allow us to derive new insights into calcium and skeletal physiology.

**P74 Clinical Audit of thyroid function testing in patients on immunotherapy at Sligo University Hospital**

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Background: Immunotherapy is being increasingly used in patients with cancer. Thyroid dysfunction is one of most common side effects of these immunotherapies. We have no official guidelines on thyroid function tests (TFTs) for immunotherapy patients in Sligo University Hospital at present. We have conducted a clinical audit in which we reviewed thyroid function test of all patients on immunotherapy and compared them with the NHS Clatterbridge guidelines on immune related adverse events. Results: There were 25 patients on immunotherapy treatment. Of the 25 patients 24 (96%) had baseline TFTs but only 13 (52%) had TFTs performed with every cycle as. 11of the 25 (44%) had biochemical evidence of thyroid dysfunction. 10 (91%) were hypothyroid and only 1(9%) was hyperthyroid. However only 5 of them were symptomatic. 9 of the 11 patients (82%) had the appropriate treatment and only 2 (18%) required a referral to endocrinology. None of the 11 patients (0%) who had evidence of thyroid dysfunction had additional tests for pituitary dysfunction performed which was recommended by the Clatterbridge guidelines.Conclusion: Results showed that compliance to do baseline TFTs before starting immunotherapy was good but repeat TFT testing with every cycle was done only in half of patients and none of them were checked for pituitary dysfunction. We proposed to introduce local Sligo hospital guidelines for patients on immunotherapy based on NHS guidelines in collaboration with the endocrinology department at Sligo University Hospital.

**P75 Audit of Inpatient Diabetes Care: Are we cutting the cloth to measure?**

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Effective inpatient diabetes care has significant beneficial impact on patient recovery and timely patient discharges. However, the resources required to deliver an effective inpatient diabetes care, are largely un-quantified in Ireland. We therefore performed a snapshot study of the patients admitted to Midland Regional Hospital Portlaoise on 15th November 2018, to determine what proportion of in-patients had diabetes and to measure their care needs. We found that 20 out of 100 in-patients admitted had diabetes. In-patients with diabetes had a mean age of 59±22.2 years; 65% were female; 80% had type 2 diabetes; 10% had type 1 diabetes and 10% had gestational diabetes mellitus. Hyperglycaemia (capillary blood glucose >10mmol/L) were recorded in 45 %; hypoglycaemia (capillary blood glucose <4mmol/L) in 10%. 60% of in-patients with diabetes were reviewed by diabetes team within 48hrs of admission. Diabetes medication errors were found in 15%. 10% received rescue insulin therapy. There was no hospital-acquired diabetic ketoacidosis or hyperglycaemic hyperosmolar syndrome. The mean length of hospital stay for in-patients with diabetes was 8.7±11.1 days. Our study identified that on an average day, 20% of the acute beds are occupied by those with diabetes. More than half of these (55%) warrant the input from the diabetes service. Furthermore, our study identified a longer hospital stay in those with diabetes than general population, and a high risk of diabetes medication errors. Thus, we highlight the current demands on the inpatient diabetes service and the need for review of resource allocation and streamlining of diabetes care delivery.

**P76 Apparent Mineralocorticoid Excess (AME): Finding The “Root” Cause**

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Liquorice is an uncommon cause of AME or pseudohyperaldosteronisim. The mechanism involves the inhibition of 11-beta-hydroxysteroid dehydrogenase type-2 by the active ingredient called glycyrrhizin, which leads to the uninhibited activation of mineralocorticoid receptors by cortisol. Confectionary products that contain liquorice are readily available. We report a case of severe refractory hypokalaemia due to excessive liquorice consumption. A 79-year-old female presented to the emergency department following a road traffic accident secondary to collapse. She described feeling weak in the preceding weeks and was managed by her GP for hypokalaemia. Investigations revealed hypertension (BP 180/69mmHg), severe hypokalaemia (K 2.2mmol/L), normal renal function (Na 143mmol/L, urea 3.4mmol/L, creatinine 54umol/L), normal magnesium (0.79mmol/L) and calcium (2.24mmol/L) levels with metabolic alkalosis (pH 7.537, bicarbonate 33.5mmol/L). Spot urinary potassium was 22mmol/L. The patient denied taking medications including over-the-counter or herbal medicines that can cause hypokalaemia. Hypokalaemia persisted for six days despite aggressive IV and oral potassium replacement. She later developed pulmonary oedema and was treated in ICU. Further discussion with the patient revealed that since she quitted smoking, she was taking liquorice sweets excessively for the past 3 months to manage her nicotine cravings. Suppression of plasma renin [4.4pg/ml (reference range <20pg/ml)] and aldosterone levels [<26pg/ml (reference range 42-209pg/ml)] also supported the diagnosis of AME. Her symptoms and hypokalaemia resolved since discontinuing liquorice.This case highlights the life-threatening and refractory nature of hypokalaemia caused by excessive liquorice consumption and the importance of comprehensive history taking including the dietary intake to identify the root cause.

**P77 Diabetic Ketoacidosis in Pregnancy (DKP) as the first presentation of diabetes mellitus**

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DKP is a life-threatening condition associated with significant maternal and fetal morbidity and mortality.We report a case of a patient presented with DKP as newly diagnosed diabetes during pregnancy. The patient is a 29-year-old presented at 32 weeks gestation with 2 day history of a persistent headache, polydipsia and polyuria. She had no personal/family history of diabetes. Her BMI was 28.5kg/m2. Urine dipstick showed glucose 2+ and ketones 4+.  Blood tests revealed blood glucose 16mmol/L and blood ketones 3.1mmol/L. Venous blood gas demonstrated a compensated metabolic acidosis (pH 7.36, pCO2 3.77kPa, bicarbonate 15.6mmol/L and lactate 1.44mmol/L). CT brain with contrast showed no abnormality and no evidence of venous sinus thrombosis. She was treated with IV insulin infusion, IV fluids and electrolytes, closely monitored in high dependency setting and switched to a basal bolus insulin regime once stabilized. The fetal scan showed the abdominal circumference was more than 95th centile. The retrospective review of the patient’s antenatal chart revealed a trace glycosuria at 14+2 weeks and glycosuria 1+ at 28+5 weeks gestation. Anti-GAD antibodies were positive supporting the diagnosis of type 1 diabetes mellitus. She was followed up closely and she delivered a male baby by spontaneous vaginal delivery with a birthweight of 4.2kg at 38+3 weeks gestation. This case emphasizes the importance of careful assessment if mild persistent glycosuria occurs in the early antenatal period. Persistent glycosuria in early antenatal period suggests that the patient may have underlying diabetes and if left untreated, it may lead to diabetic ketoacidosis.

**P78 Assessing patient awareness of appropriate ketone testing in type 1 diabetes mellitus**

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Diabetic ketoacidosis (DKA) is a life-threatening emergency characterised by hyperglycaemia, ketonaemia and metabolic acidosis. The associated mortality ranges from 0.7 - 5%. DKA has the potential to be avoided with appropriate ketone testing. The aim of this study is to assess patient knowledge of appropriate ketone testing among type one diabetics in an Irish population. A descriptive cross-sectional study was conducted in the diabetes outpatients at Cork University Hospital. All patients with type 1 diabetes over the age of 16 were included. Information was collected from 67 patients via both questionnaires and patient files regarding patient knowledge about ketone testing, methods and adherence to testing. 50.7%(n=34) of patients have a blood ketone meter to measure ketones, 22.4% (n=15) have urine test strips and 14.9%(n=10) use both. Only 29.9%(n=20) said they regularly measure ketones, 38.8%(n=26) measure ketones sometimes and 31.3%(n=21) not at all. Of the 92.5%(n=62) of people who reported knowing what ketones are, only 56.5% (n=35) identified the blood glucose level at which to check for them. Knowledge of ketone levels suggesting risk of DKA was poor with only 37.3% (n=25) of respondents correctly identifying the ketone level at which one should become concerned. This study shows that appropriate ketone testing is low amongst patients with type 1 diabetes. This was particularly true for those who had not completed a structured diabetes self-management programme. Long waiting lists limit accessibility to these programmes and so it is important for clinicians to highlight the importance of ketone testing at routine appointments.

**P79 Pseudohypoparathyrodism Type 1A**

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Hypocalcaemia is a hallmark of pseudohypoparathyroidism type 1A (PHP1A), characterised by parathyroid hormone (PTH) resistance and features of Albright Hereditary Osteodystrophy. We report 3 individuals with a consistent phenotype highly specific for a non-truncating *GNAS* single base exchange who presented to a district general hospital. Patient A with mild learning disability was referred in 2013 by a rheumatologist after noticing shortened 4th and 5th metacarpals and hypocalcaemia (serum adjusted calcium 1.84 (normal range 2.20-2.60mmol/l)). PTH was raised at 82 (15-65 pg/mL), as was phosphate 1.52 (0.8-1.5mmol/L). Magnesium was normal. There was end organ resistance with raised luteinising hormone (LH) 8.8 (1.7-8.6u/L) and thyroid stimulating hormone (TSH) 5.03 (0.3-4.5mU/L). Follicle-stimulating hormone (FSH) was normal. Investigations suggested PHP1A. The patient reported his mother and brother had a similar appearance. Genetic testing revealed a novel *GNAS* polymorphism. His relatives did not attend for requested genetic screening. In 2016 patient B with moderate learning disability was re-referred to endocrinology. In 2009 he attended for exclusion of Cushing’s syndrome but was lost to follow up. The patient appeared familiar and it became clear he was patient A’s half-brother (different surname). Calcium levels were, however, normal at 2.25mmol/L, with raised PTH (138pg/mL), LH (8.8iU/L), and TSH (5.94 mU/L), but normal FSH. He has the same polymorphism as his half-brother. Given their phenotype we suspect this mutation to be pathogenic. Obtaining a complete family history is important in calcium homeostasis disorders. Screening for *GNAS* mutations should be considered in suspected PHP1A, even if biochemistry is not typical.

**P80 Use of liraglutide and dulaglutide for weight loss: real-world observations on efficacy and tolerability**

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GLP-1 agonists are commonly prescribed for the treatment of T2DM with obesity, but have also shown efficacy in obesity alone. We conducted a retrospective study to examine the efficacy of liraglutide (Saxenda/Victoza) and dulaglutide (Trulicity). We examined weight change, duration of use, prescribed dose, tolerability and whether lifestyle changes were implemented. Results were analysed for combined GLP-1 agonist use, and liraglutide/dulaglutide alone using ANOVA and shown as mean+SEM.143 patients were prescribed GLP-1 agonists (75% liraglutide, 25% dulaglutide). 64.3% were female, 54.6% had a diagnosis of diabetes and 77.6% were co-prescribed metformin. Liraglutide users were asked to stay on the maximum tolerated dose for as long as possible. Doses were 0.6mg(22%), 1.2mg(37%), 1.8mg(17%), 2.4mg(7%) and 3.0mg(17%). Dulaglutide users received fixed dose 1.5mg weekly. 83.8% of all GLP-1 agonists users experienced reduced appetite while 30.3% reported adverse side effects. Dulaglutide users had less side effects than liraglutide users (8.3%vs37.4%). 63.1% modified their diet, while 17.7% increased exercise. The mean weight loss of patients using dulaglutide was greater than those using liraglutide (6.13kg+0.45 vs. 4.87kg+0.56) over a mean of 5.03+0.29 months compared to 4.89+0.49 months respectively. Patients who used GLP-1 agonists for longer had greater reduction in weight (p=0.003). In such patients, the addition of metformin(p=0.009), appetite reduction (p=0.004) and absence of adverse side effects (p=0.002) showed greater weight loss. Diet modification was associated with increased weight loss however increased exercise was not. We recommend liraglutide be used at lower doses to improve patient compliance, treatment duration and efficacy.

**P81 Medical management of a patient with ectopic ACTH syndrome**

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Endogenous Cushing’s syndrome is rare, with an incidence of 0.7–2.4 per million population per year. Ectopic ACTH producing tumours are responsible for approximately 5–10% of these cases. We present the case of a 78-year-old man who presented with a two week history of generalised malaise, breathlessness and lower limb oedema. On presentation, serum potassium was 2.1 mmol/L, falling to 1.8 mmol/L despite IV replacement. Fasted morning bloods showed ACTH 242ng/L (0 – 47), and cortisol 1,590nmol/L (140 – 630). Overnight low-dose dexamethasone suppression test (DST) showed no reduction in cortisol. 24-hour urinary free cortisol was 4,818nmol (60–270). High-dose DST with 2mg QDS for 2 days returned cortisol levels of 1,230nmol and 1,360nmol. Abdominal ultrasound US showed three echogenic lesions in the liver. Subsequent triple phase CT scan revealed a right upper lobe primary bronchogenic neoplasm with hepatic and bilateral adrenal metastases. Biopsy of a liver lesion was consistent with small-cell lung cancer. Immunohistochemistry stained positive for synaptophysin, chromogranin, INSM1, CD 56, TTF1 but additional stain for ACTH was negative. The patient required 90 mmol IV potassium and 84 mmol oral potassium for maintenance. He commenced 250 mg metyrapone BD to control symptoms. Potassium requirements were greatly reduced on metyrapone but was transitioned to ketoconazole 200 mg BD due to a national shortage. The patient was unfit for adrenalectomy or chemotherapy and received palliative medical management of hypercortisolism and remained comfortable throughout his end-of-life-care.

**P82 Community Diabetes Belfast**

*GM Magee on behalf of the enhanced Community Diabetes Team.*

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The Community Diabetes Service was developed by the Belfast Integrated Care Partnership - a collaboration of primary and secondary care, community and voluntary organisations, launched in November 2017. A new referral pathway for the 84 Belfast GP practices was agreed to facilitate enhanced type 2 diabetes management in the community, aiming over time to maintain specialist hospital services for Type 1 diabetes, foot disease, pregnancy and pre-pregnancy care, significant renal disease, Insulin pump therapy, complicated type 2 diabetes and inpatient care. Investment for additional diabetes specialist nurses, dietitians, diabetes care technicians, admin and a community Diabetologist was provided. Multidisciplinary clinics were established across 7 sites where patients, who might previously have been referred to hospital, are reviewed frequently, closer to home, or at home, then discharged to GP led care once individualised HbA1c targets are achieved. Additionally, a GP advice line was introduced, virtual GP clinics offered and enhanced educational support provided for practices in the form of a diabetes handbook, Diabetes Interest Groups (DIGs) and tele-mentoring utilising ‘ Project ECHO’. In 2018-19, 2106 patients were referred to the service, an increase of 64% from the previous year. 549 were referred to the consultant-led clinic and 46% of these discharged back to GP led care. 14.8% were managed virtually, with a further 323 case discussions at practices. Referrals into hospital clinics reduced over this period by 32%. Community diabetes is an effective way to deal with increasing demand on hospital diabetes services and enhances the patient experience

**P83 Does gestational diabetes mellitus have a legacy effect, increasing the risk of diabetes for both the woman and next generation through a decrease in the incretin effect? A systematic review**

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The incretin effect, whereby an increased insulin response is seen in oral, as opposed to intravenous, carbohydrate loading, is known to be reduced among individuals with type 2 diabetes. Gestational diabetes (GDM) is associated with an increased lifetime risk of diabetes in both mother and offspring, but the role of the incretin effect in GDM is unclear. The aim of this systematic review is to assess whether a reduction in the incretin effect is demonstrated 1)during pregnancy and in the postpartum period in women with GDM; and 2)during childhood in the offspring of pregnancies affected by GDM. A comprehensive search strategy was used to search  PubMed, EMBASE, NIH ClinicalTrials.gov, and the Cochrane database, for articles relating to “incretin effect” and “gestational diabetes” .Forty studies were identified and assessed for quality and bias using the CASP tool (Critical Appraisal Skills Programme). A total of 11 studies were included in the final qualitative review. A meta-analysis was not performed due to methodological and clinical heterogeneity among the included studies. However, most (10 of 11) included studies demonstrated a reduction in the incretin effect among women with GDM, and among the offspring of these pregnancies. A diminished incretin effect among women with GDM may therefore partially mediate the increased risk of type 2 diabetes seen in both women with GDM, and offspring of these pregnancies. Larger studies with standardised protocols may help to further elucidate the mechanisms behind this phenomenon and help inform potential therapeutic strategies to prevent the development of diabetes.

**P84 Estimates of Total Energy Expenditure in Adults with Severe Obesity Suggest that Excess Energy Intake Rather than Inadequate Energy Expenditure is the Energy Balance Lesion.**

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Obesity arises from an imbalance between dietary energy intake and total energy expenditure. Often, affected individuals perceive inadequate physical activity energy expenditure as the cause of weight gain, rather than excess dietary intake. We sought to explore likely reasons for energy imbalance in patients with severe obesity.In adults attending our regional bariatric service, age, sex, weight and height were used to determine body mass index, ideal body weight and estimated resting energy expenditure (REE) using the Harris Benedict equation. We modelled actual total energy expenditure (TEE) assuming a very sedentary physical activity level (PAL) of 1.2. We also derived a hypothetical TEE for the patients’ ideal weights, assuming moderately high PAL of 1.55. We used a paired t-test in SPSS. Data from 66 patients (mean age 54.7±11years, 48.5% male, mean body mass index 49.7±8 kgm-2) were analysed. Compared to being active at their hypothetical ideal body weight, actual TEE was invariably higher in patients with severe obesity, even assuming very low PAL (2740±607 versus 2269±306 kcal, respectively, mean difference 471±48 kcal, P<0.001).Adults with severe obesity even at a very sedentary PAL, burn more calories than they would if they were at their ideal body weight and were physically active. This suggests that excessive calorie consumption rather than inadequate energy expenditure drive severe obesity. Therapeutic strategies ought to be designed accordingly.

**P85 Utiliziing British Thyroid Association (BTA) classification influences fine needle aspiration frequency**

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Thyroid nodules (TN) are common and the majority are benign. With increasing ultrasound (US) resolution, the prevalence of TN in normal adult population can reach 68%. Reporting system on TN often varies amongst institutions. The British Thyroid Association (BTA) 2014 guidelines recommend assigning a U score to TN based on their sonographic characteristics to guide Fine Needle Aspiration (FNA). Significantly, size is not included. Key recommendations of the guidelines stipulate that U3-U5 categories should undergo FNA. We set out to examine if the frequency of FNA would change if the U score was adopted in thyroid US (TUS) reporting in St Columcille’s Hospital Loughlinstown (SCHL). All TUS performed between Jan 1st 2017 to Dec 31st of 2018 were retrospectively assigned U scores. The initial TUS reports and any subsequent TUS and cytology reports were examined. Overall, 162 TUS were included, (female=138 [85.2%]). Of these, 79% are from Primary Care requests. Average age was 49.9±16.2 years. Nodules were reported in 117 TUS (72.0%) (female=103 [88.0%]), of which 9 had FNA. Retrospective reassignment of U Classification yields U1 of 45 (27.8%), U2 of 92 (56.7%), U3 of 15 (9.3%), U4 of 5 (3.1%) and U5 of 4 (2.5%), ie 24 TUS in U3-U5 categories. Of the U3-U5 categories, 9 (24.5%) had FNA but 15 (55.6%) did not. None of U1-U2 categories had FNA.We conclude that frequency of FNA for TN in SCHL is low and if U classification was adopted, 15 more TUS would have been appropriate for FNA.

**P86 Is There a Role for Genetic Testing in Guiding the Management of Primary Hyperparathyroidism in Pregnancy?**

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Primary hyperparathyroidism (PHPT) in pregnancy is associated with serious maternal and foetal complications, and is genetically determined in ~10% of cases. Confirming a genetic diagnosis can guide management of inherited PHPT, and enables screening for syndrome-related diseases. Case 1 is a 20 year old female diagnosed with PHPT at 5 weeks gestation. She was hypercalcaemic (2.78 mmol/L at diagnosis), had negative neck ultrasonography and a MEN1 mutation (exon 2, c.236\_237del, p.(Pro79fs)). She required open neck exploration and a 3 gland parathyroidectomy in the 2nd trimester due to severe symptomatic hypercalcaemia. The standard surgical approach of a 3.5 gland parathyroidectomy was avoided due to the risk of inducing hypoparathyroidism. The patient’s symptoms resolved post-operatively. She delivered a healthy baby at 38 weeks. Case 2 is a 40 year old female with a known diagnosis of PHPT who was awaiting parathyroidectomy prior to pregnancy. She was hypercalcaemic (2.78 mmol/L at 7 weeks), and had a lower left parathyroid adenoma on pre-pregnancy SPECT-CT. Genetic testing was not performed as she was 40 at diagnosis and had no contributory family history. After failure of conservative management, parathyroidectomy of the left superior parathyroid gland was performed in the 2nd trimester. Her symptoms improved post-operatively. She went into labour at 37+4 weeks and had a c-section due to fetal bradycardia. Genetic testing enables the management of PHPT to be tailored appropriately. It can inform the surgical approach, including the need for subtotal parathyroidectomy and bilateral neck exploration in cases at risk of multiple parathyroid gland disease.

**P87 Investigating the Accuracy of Risk Factor Calculators in Diagnosing Maturity Onset Diabetes of the Young (MODY)**

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MODY is a rare form of diabetes attributable to autosomal dominant monogenic mutations. Several risk factor calculators have been proposed to guide rational genetic testing in suspected MODY. We retrospectively applied these risk factor calculators to patients with confirmed MODY who attended the diabetes service in UHG to identify the most accurate calculator in predicting MODY in this patient cohort. Ellard et al. proposed age at diagnosis ≤25, BMI <30 and HbA1c ≤58.8 mmol/L as the criteria for genetic testing in MODY. This captured 6/21 (28.57%) of our MODY patients. Thanabalasingham et al. proposed age at diagnosis ≤30, BMI <30 and HbA1c ≤63.9 mmol/L. This accounted for 8/21 (38.1%) of our MODY patients. The MODY Probability Calculator developed by Shield et al. uses logistic regression to determine the probability of MODY. 9/22 (40.9%) had positive predictive values (PPV) of >50%, conferring a 0.47/100 false negative rate and a 3/100 false positive rate if used as the basis for genetic testing referral. 5/22 (22.73%) had a PPV of >75%, conferring a 0.9/100 false negative rate and a 1.2/100 false positive rate, which is highly sensitive / specific. 12/22 (54.55%) had a PPV >20%, conferring a 0.14/100 false negative rate and a 16.8/100 false positive rate. This work demonstrates that the MODY Probability Calculator currently achieves the best balance of sensitivity / specificity in diagnosing patients with MODY. Nevertheless, 45% of known MODY patients were not identified. These calculators are diagnostic adjuncts to stratify MODY risk but do not replace clinical judgement.

**P88 An Interesting Case of a Familial Insulinoma**

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A 42 year old lady presented to the Endocrinology clinic with a longstanding history of exertional dizziness, with marginal symptomatic improvement with frequent carbohydrate rich meals. She had no associated nausea, palpitations, diaphoresis or weight gain. Her father and paternal grandmother had insulinomas, successfully treated with pancreatic surgery. Biochemical evaluation in clinic revealed a random plasma glucose of 2.7mmol/L (asymptomatic), HbA1c of 24mmol/mol, and no evidence of pituitary, liver or thyroid dysfunction. She was admitted for a 72-hour fast due to the clinical evidence of an insulinoma. During the 72-hour fast the patient remained stable and asymptomatic despite plasma glucose levels being persistently <3mmol/L. The fast was terminated at hour 55 due an episode of symptomatic neuroglycopenic hypoglycaemia (glucose 2.2mmol/L, insulin 43.8pmol/L, C-peptide 463pmol/L). The hypoglycaemia was treated successfully with IV glucagon. Growth hormone, IGF1 and proinsulin levels were normal. A sulphonylurea screen was negative. The biochemistry results were consistent with endogenous hyperinsulinaemia. Preliminary imaging, including CT abdomen/pelvis, MRI liver/pancreas, planar and SPECT octreotide scintigraphy of the thorax, abdomen and pelvis, has failed to localise the site of the insulinoma. Endoscopic ultrasonography and MEN-1 / MEN-4 genetic testing are pending. Selective arterial calcium stimulation testing is being considered. Insulinomas are rare neuroendocrine tumours with an incidence of 1-4/1,000,000. In 5% of cases, insulinomas are associated with the MEN-1 genetic mutation. The percentage association of insulinomas with MEN-4 has not yet been defined. This is an interesting case of a likely familial insulinoma with to-date no association with MEN-1 syndrome.

**P89 Use of Rituximab in the management of IgG hypophysitis; a case report**

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Hypophysitis is a frequent manifestation of IgG4-related disease (IgG4-RD), an inflammatory condition characterised by multisystem infiltration of IgG4-positive plasma cells.  While steroids are effective, high doses are required and relapses occur.  Rituximab is a promising alternative agent to traditional steroid-sparing agents which have had inconsistent results.  Evidence to support its use in hypophysitis is limited to 4 case reports. Here, we describe our experience of Rituximab in IgG4 hypophysitis.  A 77-year-old female presented to the emergency department following a collapse.  She had a history of IgG4-related retroperitoneal fibrosis, CMV viraemia and osteoporosis.  Pre-admission maintenance regimen was Prednisolone 5mg daily and Mycophenolate Mofetil 250mg BD.  MRI pituitary revealed a heterogenous pituitary mass with suprasellar extension, compressing the optic chiasm and consistent with hypophysitis.  Laboratory investigations demonstrated panhypopitutarism and partial diabetes insipidus. Visual field assessment revealed inferotemporal quadrantanopia.  Prednisolone, 30 mg od, was commenced with marked reduction in the size of the pituitary mass following 6 weeks of treatment. Particularly in view of the history of CMV viraemia and osteoporosis, alternative approaches were considered to reduce steroid exposure.  Two 1g doses of Rituximab were administered and Prednisolone reduced to 5mg daily. Further reduction was reported in size of the pituitary mass at 6 months.  Pituitary function did not recover. This represents one of the earliest reports of successful Rituximab use in IgG4 hypophysitis. Initial shrinkage of the pituitary mass with high dose steroids was followed by further reduction in size following substitution with Rituximab.

**P90 Familial Isolated Hypoparathyroidism in an Irish kindred**

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Familial isolated hypoparathyroidism(FIH) is an autosomal dominant condition caused by an activating mutation in the calcium-sensing receptor(CASR) lowering its set-point.  We describe the presentations and manifestations of FIH in an Irish kindred. The proband was diagnosed in the neonatal period; she was noted to be hypotonic, jittery and feeding poorly. Corrected calcium(cCa2+) was 2.05mmol/L; PTH<2ng/l. Genetic screen revealed a heterozygous GIY830SER mutation in the CASR gene. She has since remained well on Alfacalcidol replacement. The diagnosis prompted review of her 5-year-old brother, who had a history of febrile convusions. He was found to be hypocalcaemic and carried the same mutation. He continued to have hypocacaemic seizures into adult life. MRI–brain showed no basal ganglia calcification. The condition was also genetically confirmed in their father who had a history of seizures in early adulthood, and later in their grandfather who was found to be profoundly hypocalcaemic in his 8th decade and subsequently died of a cardiovascular complication. Independently twelve years after the proband was diagnosed, her paternal uncle presented to Neurology with a subacute history of muscle aches.  Investigation for myositis identified cCa2+ of 1.72mmol/L. CT-brain revealed extensive basal calcification; the patient had no parkinsonian features. Finally, fourteen years after the initial diagnosis, their aunt was also diagnosed following routine blood tests in primary care. She was asymptomatic with no history of seizures but had basal ganglia calcification. No family members are known to have renal complications. This kindred demonstrate the variable presentations and clinical manifestations of genetically confirmed FIH.

**P91 A re-audit of acromegaly management: Endocrine Society Clinical Practice Guidelines (2014) goals of management as a standard.**

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Acromegaly is a disorder of growth hormone(GH) hypersecretion. The Endocrine Society Clinical Practice Guidelines recommend treatment to achieve random GH<1.0 μg/l and age-normalised IgF1, and screening with colonoscopy and for cardiovascular disease. A 2018 audit in our unit identified GH and/or IGF-I above target in a significant number of acromegalic patients, and deficiencies in colonoscopy and cardiovascular screening. We aimed to carry out early review of all active acromegalic patients to address these concerns. Forty-eight patients were identified as having attended with acromegaly, of whom 14 had died or been transferred to other hospitals. Results for GH and IGF-1 levels were incomplete in 11 patients. Of those with results available, 65% met GH targets while 50% met IGF-1 targets (compared to 43% in 2018). Among those not at target, 5 were awaiting surgery at time of audit and 8 had received multimodal treatment. Co-morbidity screening has improved with colon screening up-to-date in 21 patients compared to 15 patients in 2018; 2 patients on a waiting list. Echocardiogram was up-to-date in 23 patients with 3 patients on waiting list. We report year-on-year improvement in monitoring of acromegaly and attainment of treatment and screening targets. Deficiencies still exist, and these results demonstrate the difficulty of attainment of current biochemical targets for disease remission.

**P92 An unusual cause of thyrotoxicosis.**

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We describe the case of a 24 year old man with metastatic non-seminomatous germ cell tumour who presented with hyperthyroidism and gynaecomastia associated with elevated human chorionic gonadotrophin(HCG). Following a 3 month history of gynaecomastia, flank pain, nausea and 7kg weight loss, the patient attended the emergency department with persistent vomiting. Initial laboratory investigations reported TSH <0.05mU/L (normal range 0.3-4.3) and free T4 29.5pmol/L (12-22), TPO antibodies negative, FSH <1 and LH 1 U/l, testosterone >52 nmol/L (9-29.0), bioactive prolactin 1048mU/L (63-245), SHBG 110.6 nmol/l (18.3-54.1), and oestradiol 3935pmol/L (<223). Clinical examination revealed bilateral tender gynaecomastia and supraclavicular lymphadenopathy. Testicular examination identified a left testis irregularity that was confirmed on ultrasound. Chest Radiograph revealed multiple bilateral opacities measuring up to 6 cm. Initial urine HCG was negative when tested on two occasions; however given suspicion for a HCG-secreting tumour, serum HCG was measured and reported as 503,944 IU/ml (<5) and AFP 17.6 IU/ml (0-5.0). The negative urine HCG is believed to be due to “hook effect”. CT revealed bulky retroperitoneal lymphadenopathy measuring 13 cm consistent with metastatic spread from the testicular tumour. Chemotherapy was started and over the following 2 months, all endocrinopathies resolved with corresponding reduction of HCG to 65.0 IU/ml. HCG-induced hyperthyroidism is a rare cause of hyperthyroidism. Endocrine manifestations occur in <5% germ cell tumour presentation but should be considered particularly when multiple endocrine abnormalities are present.

**P93 An audit of inpatient diabetes consult requests at University Hospital Galway**

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An electronic referral system is in place at University Hospital Galway, where doctors can submit requests for inpatients to be reviewed by the diabetes service. Each consult request is automatically recorded in a database containing information such as the timing of the requests, and patients’ clinical details. This rich data source has not previously been exploited to inform service provision at the hospital. The aims of this audit were to understand the level of activity of the inpatient diabetes consult service, and to identify potential areas for improvement. Data from the 2018 calendar year were extracted from the database, and anonymised. The reasons for consult requests were inspected, and categorised according to the NHS ‘Think Glucose’ guide1. Frequencies for categorical variables were calculated using Microsoft Excel. In total, 562 electronic consult requests were logged in 2018, corresponding to an average of 10.8 per week. In 158 cases (28%), the reason for the consult request was indeterminable. For the remaining 404 entries, the most common requests were for advice regarding: glycaemic control; medication review; hyperglycaemia; hypoglycaemia; and foot ulceration. However, comparison with hand-written data kept by the diabetes clinical nurse specialists shows that the service is approximately 3 times as busy as the electronic data suggests. Verbal consult requests (not electronically recorded) lead to an underestimation of the true level of activity of the service, which has implications when requesting additional specialist staff hires. This audit has highlighted the importance of establishing and enforcing well-defined rules for submitting electronic consult requests.

**P94 Transition Clinic Audit**

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Transition is a difficult time in Diabetes Care with poor glycaemic control mirrored across various healthcare setups. In Belfast a joint (adult and pediatric teams) monthly adolescent clinic (age 14-18yr) is held in the adult diabetes centre. The aims of this audit were to 1. Evaluate diabetes care in this age group, and 2. Assess patient experience at this clinic.

Electronic records of 24 young people attending the adolescent clinic were reviewed. Key findings were that HbA1c is above target (<48mmol/mol) for 21/24 patients (mean HbA1c 68.8mmol/mol). All had been offered or attended formal structured education but many were not applying these key principles. Non-attendance rate at the clinic was low and this was attributed to partial booking and parental influence. Despite poor control only 3/24 patients were referred to clinical psychology. Screening for complications was good with a significant improvement in retinal screening following the introduction of opportunistic screening (94.1% uptake, previously 57.4%). Waiting time at the clinic was the major factor affecting patient experience. Following this audit, HbA1c is now analysed in the clinic which should reduce waiting time. A “social waiting room” has been introduced to promote education whilst waiting for their consultation. All patients are now screened for “diabetes distress” at clinic to ensure prompt referral to clinical psychology if needed. Next steps include a high HbA1c pathway and the introduction of remote clinics over exam periods. The impact of these changes on HbA1c and patient experience will be evaluated next year.

**P95 Clinical Experience of Selective Arterial Calcium Stimulation (SACS) in the localisation of inappropriate hyperinsulinaemia**

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Insulinomas are rare tumours (4 cases per million per year). The diagnosis is usually made by demonstration of inappropriate hyperinsulinaemia following prolonged fasting. Subsequent investigations for anatomical localisation have variable diagnostic properties: CT, MRI and Endoscopic Ultrasound (EUS) have shown sensitivities of 45%, 44% and 73.9% respectively. SACS with hepatic venous sampling can localise discrete insulin-secreting islet cell tumors to regions of the pancreas with a high sensitivity of 93%. A twofold or greater step up in right hepatic vein insulin concentration from baseline indicates a positive response with intra-arterial calcium injection. We describe our experience of SACS in the localisation of Hyperinsulinaemia in a large series of 19 patients. Of the 19 SACS performed 14/19 patients had histology confirming insulinoma. SACS successfully localised the insulinoma in 13/14 (93%) patients. 5/19 patients who had a negative SACS were found to have another cause for hyperinsulinaemia. 3 of these patients had an unclear clinical course, 1 demonstrated inappropriate hyperinsulinemia however negative SACs, 1 with autoimmunie hyperinsulinaemia. By contrast, CT imaging successfully identified only 6/14 (43%) of insulinomas. Endoscopic ultrasound was performed in 8/19 patients. It clearly identified a pancreatic lesion in 4/8 patients with the remaining 4 patients not conclusively having insulinoma. Therefore, it successfully identified 100% of patients with a pancreatic lesion.This case series highlights the successful utilisation of SACS for identification of insulinomas. This procedure is well tolerated and can be performed as an outpatient procedure. Other imaging modalities appear less sensitive.

P96 Detection of vertebral fracture in an acute hospital setting: a potential intervention to reduce future fracture risk?

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Identification and treatment of osteoporosis following a vertebral fragility fracture provides an opportunity to prevent future fractures. Under-diagnosis of vertebral fractures is common in clinical practice. We undertook an audit/service improvement project within radiology to raise awareness of vertebral fracture management. We provided an educational session on fracture prevention and Genant vertebral fracture staging charts at radiology stations.

A retrospective study of 154 non-traumatic CT imaging scans and radiology reports were analyzed from Sectra RIS, in those aged > 50 years. Imaging and reports were assessed for fracture identification and terminology, compared with standards based on the National Osteoporosis Society guideline “Clinical Guidance for the Effective Identification of Vertebral Fractures.” The prevalence of incidental moderate to severe vertebral body fractures was 24/154 (15.6%) [13F/11M; mean age 75 years; 54-84 years]. 13/24 had a pre-existing history of osteopenia or osteoporosis. Pre-existing vertebral body fractures were noted in 11/24. The most common vertebral fracture location was L1. Multiple fractures were noted in 11/24. While 20/24 of moderate-severe vertebral body fractures were reported, there was a wide variation in the terminology used to describe the relevant fractures (fracture n=13; compression, n=4; height loss, n=1; wedging, n=2). This audit has illustrated the benefits of raising awareness within a radiology department to improve the detection of vertebral body fractures. There is scope to standardize the terminology for fracture reporting systems. We have introduced a voice prompt to flag the presence of vertebral fracture and to signpost referring clinicians to fracture prevention services.

**P97**  **The effect of Body Mass Index on lung volumes in severe obesity**

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A raised body mass index (BMI) is associated with increased respiratory symptoms of dyspnoea and reduced exercise tolerance. Many patients are investigated with pulmonary function testing. Obesity causes reduction in lung volumes1, notably the expiratory reserve volume (ERV), with relative preservation of remaining lung volumes. The effects of severe obesity on lung volumes have not yet been evaluated. We assess the effect of severe obesity on the lung volumes in an Irish bariatric population without significant pre-existing lung disease. We recruited 72 patients from an ambulatory weight management service and performed pulmonary function testing, including lung volume measurement. Patients had ambulatory sleep assessment and arterial blood gas (ABG) analysis. 42 patients also had a six-minute walk test (6MWT). Eight patients did not complete lung volume testing, nine patients did not meet ATS testing criteria. Two patients were excluded with obstructive spirometry. 53 patient data sets were analysed. Mean BMI was 53.8 kg/m2. We found inverse relationships between BMI and lung volumes. ERV showed a sharp decline in patients with BMI >60kg/m2, at a nadir of 25% predicted. This was associated with a decline in vital capacity (VC) to 82.7% predicted, and total lung capacity (TLC) to 83.4% predicted. These correlated with a lower exercise SpO2 nadir (r=0.439, r=0.367, p<0.05), a raised daytime pCO2 (r=-0.563, -0.549, p<0.05) and a lower nocturnal SpO2 nadir (r=-0.304, p<0.05). In severe obesity, patients mechanically decompensate due to reduced lung volumes, contributing to daytime hypoventilation. More research is needed to elucidate this mechanism.

**P98 Obstructive Sleep Apnea Prevalence in an Irish Hidradenitis Suppurative Cohort**

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Hidradenitis Suppurativa (HS) is a chronic inflammatory debilitating skin disease of the hair follicle. HS has a known association with certain cardiovascular risk factors including obesity, smoking, diabetes and metabolic syndrome. HS was previously thought to be a disease of infectious aetiology, but there is increasing evidence to show that it is a disease of immune dysregulation with TNF-α implicated in its pathogenesis. Circulating levels of TNF-α are also elevated in obstructive sleep apnoea syndrome (OSAS). Given the overlap of lifestyle factors and inflammatory response seen in both HS and OSA, we investigated the prevalence of OSAS in an Irish HS cohort. We recruited patients with HS from dermatology outpatients in a major Dublin hospital. Data collected includes anthropometrics, dermatological disease status, and ambulatory sleep study assessment. Sleep study results were analysed in a dedicated sleep service in the same hospital. We recruited a total of 16 patients. Mean BMI was 34.7 kg/m2. Female predominance was 31.3%. Ever smokers were 55%. Ambulatory sleep study results revealed 37.5% prevalence of mild OSA, with the remainder 62.5% screening negative. Our results show a high prevalence of OSA in a cohort of patients with HS. Further research is needed on the overlap between HS and OSAS, and whether treating OSAS with CPAP can positively impact disease control, in a similar manner as lifestyle modification for obesity.

**P99 Co-morbid depression and diabetes distress among patients with type-2 diabetes in an Irish cohort.**

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The co-morbid relationship between depression and/or distress in patients with diabetes is well-established. Risk factors for depression include female sex, age < 65, elevated body mass index (BMI) and HbA1c ≥ 53 mmol/mol. As this association has not previously been investigated in Ireland, we aimed to determine the prevalence of and risk factors for depression in patients with type 2 diabetes mellitus (T2DM) in an Irish cohort. A total of 143 out-patients at Connolly Hospital Blanchardstown anonymously completed 3 questionnaires: 1) demographic questionnaire, which included potential risk factors for diabetes and depression; 2) Diabetes Distress Scale (DDS); 3) Patient Health Questionnaire-9 (PHQ-9). Higher DDS and PHQ-9 scores indicate more severe levels of distress or depression, respectively. Statistical analysis was done using GraphPad Prism 7 software. Nineteen percent of surveyed patients had moderate to severe depression (PHQ-9 score ≥ 10) and 6% of patients had moderate diabetes distress worthy of clinical attention (total DDS score ≥ 3). Demographic variables including female sex, more hospital admissions, diabetes-related complications, more co-morbid conditions were significantly related to higher PHQ-9 scores, while younger age and more co-morbid conditions, were significantly correlated to higher DDS scores. Also, higher BMI was related to higher PHQ-9 scores (p<0.05) and tended to be related to higher DDS scores. There was a trend towards higher HbA1c being related to higher DDS scores. In conclusion, depression and distress are prevalent in this Irish T2DM cohort and risk factors are consistent those previously reported in literature.

**P100 An audit of the burden of cardiovascular risk factors among outpatients with Type 2 Diabetes**

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Atherosclerotic cardiovascular (CV) disease remains the most prevalent cause of mortality among diabetes patients. American Diabetes Association [ADA] Guidelines (2019) clearly outline individual CV risk factors which should be optimised. To determine if the current ADA guidelines for CV risk reduction are being met a retrospective analysis of 100 consecutive outpatients with type 2 diabetes was undertaken. Data was collected on blood pressure (BP), lipid and glycaemic control. Data are presented as median (range). Median age was 66 years (22-88 years) with diabetes duration of 12 years (1- 24years), 62% male. Median HbA1C was 61mmol/mol (39-126 mmol/mol). 33% of patients were insulin requiring (21% on premixed insulin, 8% on MDI, 4% on once daily basal).70% of patients met ADA BP targets and were on ACEI/ARB therapy. 59% of patients were on a statin. Of 27% with a CVD history, 50% had LDL above 1.8 mmol/L, with a median LDL of 2 mmol/L (1.3-4 mmol/L). 56% of patients were on aspirin therapy, all > 50 years. Of patients not taking aspirin 17% had a history of CVD, were > 50 years and had no contra-indication or prescription for alternative anti-platelet agent. 16% had documented heart failure. 39% had a recent echo, 9% had a reduced ejection fraction and 7.5% had diastolic failure. The majority of patients are meeting ADA CV targets. However, escalation of therapies is required, where appropriate, to bring current practice in line with ADA guidelines.

**P101 A Case of Kallman’s Syndrome lost in transition**

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Kallman’s syndrome is a rare, genetically heterogeneous disease associated with hypogonadotropic hypogonadism.A 35 year old gentleman was referred having defaulted from endocrine care. Past history included delayed puberty and cryptorchidism requiring orchidopexy at four years. Puberty was induced at 17 years with testosterone therapy. However, he had not taken androgen replacement therapy for ten years. At original presentation, MRI showed a normal pituitary gland. Examination, on representation, demonstrated height 158 cm, kyphosis, sparse bodily hair and testicular volume of <10 ml bilaterally. He denied anosmia or colour blindness. Initial investigations confirmed hypogonadotropic hypogonadism (FSH <0.5 IU/L, LH 1.0 IU/L, AM testosterone 0.8 nmo/L, free testosterone index 0.01 nmol/L). No other pituitary hormonal deficits were detected. MRI pituitary with high-resolution T2-weighted imaging demonstrated that the olfactory bulbs and sulci were markedly hypoplastic, pituitary gland was normal. US testes confirmed reduced testicular sizes bilaterally. DEXA demonstrated low bone mineral density for age at lumbar spine and left neck of femur. He was commenced on testosterone replacement therapy with close monitoring and developed growth of axillary, pubic and facial hair with recovery of sexual function. Repeat DEXA scan two years later confirms improved bone mineral density. Referral to genetic counselling was declined. The combination of hypogonadotrophic hypogonadism with characteristic radiological findings confirms a diagnosis of Kallman’s Syndrome. This case highlights the importance of obtaining views of olfactory bulbs and tract on MRI pituitary imaging if Kallman’s syndrome is suspected. It also highlights the need for adequate transition to adult services.

**P102 Exploring diabetes related distress in young adults with type 1 diabetes in Ireland**

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Living with and managing type 1 diabetes (T1D) has the potential to cause considerable negative emotional impact. This “diabetes distress” has significant clinical bearing as it is associated with suboptimal self-management and glycaemic control. Research suggests that at any one time around one quarter of adults living with diabetes are experiencing elevated diabetes distress. Young adulthood can be a particularly challenging time for those living with T1D and it is of particular importance to explore rates of diabetes related distress in this group. A cross-sectional study was conducted in the young adult clinic at University Hospital Galway. 40 young adults (age 18 -25, mean = 22.88, 24 female, 16 male) with a diagnosis of T1D completed the Diabetes Distress Scale – 2 item (DDS-2) as part of a clinic consultation tool. Those who scored above the threshold of 3 completed the Diabetes Distress Scale – 17 item (DDS–17). The mean score on the DDS-2 was 3.17, with 19 young adults scoring above the threshold of 3 (47.5%) indicating moderate to high distress. Of these 19, 6 scored above 3 on the DDS-17 indicating high distress. An additional 9 young adults scored above 3 on the “emotional burden” and “regimen related distress” subscales of the DDS-17. This work indicates that a high prevalence of diabetes related distress exists in young adults with T1D, possibly even higher than that of the general adult population. This suggests a need for screening for distress in routine clinic visits and provision of appropriate psychological services.

**P103 High prevalence of hypercalciuria in an Irish multiple sclerosis population**

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Oversupplementation of vitamin D in persons with multiple sclerosis (MS) can cause hypercalcaemia. The aim of this study was to assess the effect of vitamin D supplementation on calcium metabolism in patients with MS. Persons with MS attending the MS Clinic in St Vincent’s University Hospital between 28/6/17 and 16/8/17 were asked to complete a questionnaire, and provide a blood and urine sample. Parathyroid hormone, calcium and 25-OH vitamin D concentrations were measured in blood samples. A calcium/creatinine ratio was measured in urine. In total 52 participants were recruited, of which 31 (60 %) were receiving Vitamin D supplementation. There was no significant difference (p=0.4) in the median (range) calcium concentration between those that had received vitamin D supplementation (2.4 (2.3-2.6) mmol/L) and those that had not (2.4 (2.3-2.6) mmol/L). Median 25-OH vitamin D concentration was significantly (p=0.0004) higher in those receiving vitamin D supplements (107 (38-248) nmol/L) compared to those who were not (69 (24-130) nmol/L). There was no significant difference (p=0.18) in the median urinary calcium/creatinine ratio between those receiving vitamin D supplementation (0.4 (0.17-1.66)) and those who were not (0.4 (0.14-0.71)) although 51 % had hypercalciuria. There was no evidence of symptomatic hypercalcaemia in this cohort but increased 25-OH vitamin D concentrations and hypercalciuria suggest that regular assessment of calcium homeostasis is recommended.

**P104 Impact of a lifestyle modification intervention in adults with intellectual disability (ID) and obesity.**

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Background: Obesity has a higher prevalence in adults living with intellectual disabilities (ID) compared to the general population. We examined the impact of a diet and lifestyle modification intervention on the bodyweight of 25 obese patients with ID attending Cheeverstown House in Dublin. Methods: A chart review of patients seen in Cheeverstown. Patients attended a designated clinic with regular nursing input and quarterly consultant review. Weight was recorded at least three-monthly intervals. Data, including weight and height measurements, ID diagnoses and obesogenic and weight-loss assisting medications was collected. Results: The mean length of follow-up is 5.8 years (sd=3.4). The mean age was 42 years (sd=11.36) and 22/25 were female. Mean starting weight was 94.74kg (sd=27.4) and mean starting BMI was 38.99 (sd=11.8). 16 patients (64%) were treated with medications documented as potentially obesogenic (all either in the progesterone, SSRI, anti-epileptics or antipsychotic classes). 3 patients were prescribed GLP-1 analogues and 9 prescribed thyroxine. 80% of patients lost weight, with an average weight change among all patients of -6.02kg (sd=10.9). 40% of patients lost at least 10% of their initial bodyweight. Mean BMI change among patients was -2.82 kg/m2 (sd=4.53). Conclusion: This audit shows that 80% of individuals attending a diet & lifestyle intervention clinic lost weight over 5.8 years with 40% losing >10%. Such patients have had limited access to such interventions in the past. Increasing access for ID patients to programmes such as this has the potential to lead improved overall care for people living with disability.

**P105 Intravenous insulin therapy in the ICU at Tallaght University Hospital: an audit of current practice and effectiveness.**

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Introduction: Maintaining normoglycaemia in critically ill patients utilising standardised IV insulin protocols improves outcomes. The current protocol in the intensive care unit (ICU) in Tallaght University Hospital utilises a single algorithm for all patients independent of prior diabetes history and requires revision: this audit was designed to review current practice of the use of intravenous (IV) insulin therapy in the ICU at Tallaght Hospital and determine its effectiveness. Methods: A retrospective audit was carried out of all patients admitted to ICU from January to June 2018 and who received IV insulin during their stay. Relevant demographic and clinical data was recorded from computerised hospital databases. Data was analysed using Microsoft Excel. Results: In total, 56 patients were identified for inclusion in the audit (23 with diabetes, 33 without). Overall, glycaemic control averaged below the target 10 mmol/L (9.7). However, patients with known diabetes mellitus had higher average glucose levels than non-diabetic patients (10.6 vs 9.1 mmol/L, p < 0.05) and greater insulin requirements (52 vs 28 units/24hrs, p < 0.01). Patients with diabetes had poorer outcomes as measured by length of ICU stay, and duration of ventilatory and inotropic support. Conclusion: This audit demonstrates that overall glycaemic control is reasonable in our ICU, but that patients with diabetes are generally undertreated, resulting in relative hyperglycaemia. While there are many confounders to ICU outcome, improving the glycaemic status of diabetic patients should show benefit, and a new protocol will be introduced, with a higher insulin scale for patients with known diabetes.

P106 **Diarrhoea and hypokalaemia leading to profound hypocalcaemia after steroid treatment. Complicated electrolyte management in a case of VIP-oma.**

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VIP-omas are rare pancreatic neuroendocrine tumours, associated with secretory diarrhoea, and hypokalaemia. We present the case of a 58 year-old man with MEN-1, Zollinger-Ellison syndrome and VIP-oma. Diarrhoea responded to steroid treatment, however he subsequently developed profound hypocalcaemia. He was referred to the Neuroendocrine service after biopsy of a liver lesion revealed a well-differentiated, Grade 1, neuroendocrine tumour. Imaging suggested this was a pancreatic primary with metastases to liver, adrenals and bone. He had a past history of recurrent renal calculi. Further testing confirmed primary hyperparathyroidism. Genetic analysis confirmed MEN-1. In preparation for peptide receptor radionuclide treatment (PRRT), he underwent subtotal parathyroidectomy and was awaiting surgery for renal calculi. He presented with worsening diarrhoea, passing up to 12 watery, high-volume motions per day, and hypokalaemia which required large doses of intravenous potassium. Diarrhoea was uncontrolled on somatostatin analogue, octreotide infusion, codeine, loperamide, ondansetron, pancreatic enzyme replacement and telotristat. Intravenous hydrocortisone resulted in almost instant improvement in diarrhoea. This resulted in profound hypocalcaemia, with a nadir corrected calcium of 1.63 mmol/L. VIP-oma associated diarrhoea can be very difficult to manage. Directed treatment of his liver metastases is the optimum treatment. Steroids worked well in our case. Diarrhoea flared following parathyroidectomy and we speculate that the effect of reduced calcium, and reducing gastrin levels may have contributed to this. Steroids reduce intestinal absorption of calcium, which is usually balanced by a compensatory increase in PTH. Our patient post-parathyroidectomy was unable to elevate PTH and we speculate this resulted in hypocalcaemia.

**P107 Rare elements of hyperparathyroid disease in a single case**

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We report a 16 year old male referred urgently by his general practitioner with hypercalcaemia. He had a three year history of gait disturbance and knee pain. Radiological investigation previously indicated a fibroma of the distal femoral metaphysis and pubic body lucencies. Physiotherapy had been unsuccessful in managing symptoms. He also reported headaches, and poor concentration. Baseline tests were as follows: Serum corrected calcium (Cac ) 3.28 mmol/L (2.1-2.55), phosphate 0.64 mmol/L (0.8-1.5), alkaline phosphatase (ALP) 541 U/L(30-130), parathyroid hormone ( PTH) 834pg/mL (15-65); creatinine 50 µmol/L and urea 1.5mmol/L. Vitamin D levels were low (12nmol/L) (n>50). A diagnosis of primary hyperparathyroidism (PHPT) was made. Ultrasound and nuclear imaging demonstrated a solitary 15mm parathyroid lesion and hand x-rays demonstrated metacarpal brown tumours. He was treated with fluids, vitamin D and a calcimimetic as a bridge to surgery, performed 12 weeks later. Histology was of a likely parathyroid adenoma. He subsequently developed hungry bone syndrome despite ALP reducing modestly (385U/L) preoperatively. Nadir Cac was 1.66 mmol/L and he required 4mcg of 1,25 dihydroxycholecalciferol and 5g elemental calcium daily. Hand Xrays showed partial resolution of lesions three months postoperatively. Genetic tests are awaited. PHPT is rare under age 20 (<5% cases). Browns tumours in PHPT are rare (2-3% prevalence) and are usually located in facial bones, pelvis, and femur rather than the hand. Hungry bone syndrome is also rare (<12% of cases of PHPT postoperatively) and usually occurs in older patients with larger tumours (>2cm), and with a raised ALP and urea.

**P108 Prolonged fasting due to odynophagia unmasking a new diagnosis of metastatic insulinoma**

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Insulinomas are rare pancreatic tumours resulting in the production of excess endogenous insulin. Less than 10% metastasise. A 39 year old male was admitted with acute tonsillitis resulting in reduced oral intake. During his admission, he became acutely confused with associated inappropriate behaviour. A blood glucose level measured during this episode was 1.8mmol/L. Symptoms fully resolved with the administration of oral glucose. A 72 hour fast was performed once wthe patient recovered from tonsillitis. After 32 hours of fasting, a symptomatic blood glucose level of 1.8mmol/L was recorded. C-peptide, insulin and proinsulin were non-suppressed and glucose rose to 5.1mmol/L post glucagon. A sulphonylureas screen was negative and beta-hydroxybutyrate was 610umol/L showing borderline ketosis. A CT scan identified a 2cm pancreatic lesion in the tail of the pancreas. The patient underwent a distal pancreatectomy with splenic preservation. Histology revealed a well differentiated neuroendocrine tumour, Ki-67 index of 5% and a maximum diameter of 23mm. At the time of surgery fourlymph nodes were resected. One lymph node (measuring 0.7cm) was positive for tumour deposit. Based on the presence of the extra-pancreatic spread and despite the relatively low Ki-67 index this gentleman will require life-long follow-up for potential disease recurrence. Cases of late recurrence of metastatic insulinoma have been reported in the literature but little is known as to how best to carry out appropriate surveillance in these patients. Six months post surgery imaging and biochemistry was normal.

**P109 A Papillary Thyroid Cancer presenting as a uterine mass**

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Papillary Thyroid Cancer (PTC) is the most common form of thyroid cancer and presents with distant metastases in <10% of patients. We report an unusual case of PTC presenting as a uterine metastasis. A 69 year old female presented to the gynaecology service with post-menopausal bleeding. She had no past medical or family history of thyroid disease. Clinical examination revealed a small goitre. Imaging demonstrated a 10x6x5 cm heterogeneous, complex, solid-cystic mass in the left anterior neck replacing the left thyroid lobe with a normal right lobe. The mass extended retrosternally to the arch of the aorta causing tracheal displacement. Endometrial biopsy demonstrated nuclear clearing and overlap; intranuclear inclusion and stained positive for TTF-1 and Pax-8. Thyroglobulin was negative; however the morphology was most consistent with PTC. A core biopsy of the mediastinal mass demonstrated tubulo-papillary and tubular growth patterns; cytoplasmic clearing and overlap, and intra-nuclear cytoplpasmic inclusions. Staining was positive for CK7 and TTF-1; mCEA was negative, all supporting the diagnosis of PTC. Following total thyroidectomy and left neck dissection, PTC with focal “tall cell” features and lymphovascular invasion (stage pT3N1b) was confirmed. Multi-level cervical lymph node involvement was demonstrated. The disease burden was poorly responsive to radioactive iodine treatment and tyrosine kinase inhibitor therapy was commenced using levatinib. The disease proved to be rapidly progressive and this patient died from complications of pulmonary and abdominal metastases. Conclusion: This is an extremely unusual case of an aggressive PTC presenting as a uterine metastasis.

**P110 An Irish National Diabetes in Pregnancy Audit 2016-2018**

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Pregnancies affected by pre-existing diabetes mellitus are associated with increased risks to both mother and foetus. International guidelines advise that women with diabetes receive pre-pregnancy care focusing on optimising glycaemic control, folic acid use, smoking cessation and management of diabetes complications. In 2019, the first Irish national audit of diabetes in pregnancy was published and examined 185 pregnancies in 2015 complicated by pre-gestational diabetes. Seventy per cent of antenatal units contributed data. The aim of this national audit is to continue that work and assess pregnancy preparation and outcomes from 2016-2018 from all antenatal units.Data collection commenced in April 2019. Based on the first audit we estimate a cohort of 900 mother-offspring pairs over the 3-year period (4.6/1000 births). Data is collected on maternal age, glycaemic control, pregnancy outcomes and complications, use of teratogenic medications, attendance at pre-pregnancy clinics, retinopathy screening during pregnancy, maternal hospitalisations and the use of folic acid and aspirin before and during pregnancy. Provisional results indicate women with type 1 diabetes account for the majority attending the service. The number of women attending pre-pregnancy clinics varies depending on geographical location; a minority of women had a first trimester Haemoglobin A1c at target or used high dose folic acid pre-conception and a significant number of women undergo Caesarean delivery. Retinopathy screening is poorly conducted. This national audit will allow expansion of our understanding of the care and outcomes for women with pre-existing diabetes and assist with development of appropriate services to ensure best outcomes are achieved.

**P111 A review of the out-patient management of older patients with Type 1 Diabetes Mellitus: Is it time for a dedicated older adult clinic?**

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Type 1 Diabetes Mellitus (T1DM) is a complex disease which affects individuals of every age. With the rising incidence of T1DM, increased life expectancy and improvements in chronic disease care the number of patients with T1DM living into old age is expected to rise. We assessed our approach to care delivery for older adults to identify potential opportunities for service enhancement.We retrospectively analysed the records of adults aged >75 years with T1DM. Data were collected on duration of diabetes; age of diagnosis; cognition; co-morbidities and hypoglycaemia. We identified 27 patients aged >75 years. The mean age, duration of diabetes and age at diagnosis was 79.6+3.6 years, 36.9+15.5 years and 40.1+17.3 years respectively. Mean HbA1c, blood pressure, LDL cholesterol and estimated glomerular filtration rate were 64.6+14.0 mmol/mol, 130.5/65.4 mmHg, 2.2 mmol/L and 59.2 ml/min respectively. Documentation of hypoglycaemia was poor- 55.6% of patients had awareness of hypoglycaemia documented. Seven patients had hypoglycaemia unawareness and 1 patient had glucagon administered in the last year. All patients had at least one co-morbidity excluding retinopathy, hyperlipidaemia and microalbuminuria. Retinopathy affected 59.3% of patients; 37% attended podiatry and 81.5% took a lipid lowering agent. The most common co-morbidities was ischaemic heart disease (18.5%). Documentation of cognitive and functional impairment was limited- only 11.1% had any documentation of same and formal assessments were not done. We feel there is sufficient need to provide a dedicated older adult clinic with multi-disciplinary input. This would increase the likelihood that age appropriate comprehensive care is delivered.

**P112 Association between adiposity and total daily insulin requirements in young patients With Type 1 Diabetes a prospective cohort study.**

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We sought to determine whether there was an association between excess body fat, measured using the standardised body mass index (zBMI) and total daily insulin dose (TDI) in young patients with type 1 diabetes attending our regional paediatric diabetes clinic. We conducted a prospective observational cohort study of all patients attending our clinic over two years. Age, ethnicity and other important confounders such as pubertal staging, self-reported carbohydrate intake, screen time and physical activity levels were recorded. Of 136 patients who attended in that time, 99 agreed to participate (48.5% female, 93.9% white Irish, mean age 14±3.2 years, duration of diabetes 5.7±3.7 years, HbA1c 77.4±17.9 mmol/mol (9.2%±3.8%)) 28.3% were pre-pubertal. 16.2% were overweight or obese. Mean zBMI was 0.36±0.94 and mean TDI dose was 56.6±27.9 units per day. 19.2% of patients used insulin pumps. 38.4% carbohydrate counted. Only 40.4% were strenuously active more than three times per week. Television viewing and gaming were highly prevalent. In linear regression modelling, there were strong and statistically significant associations between zBMI as the independent variable and TDI as the dependent variable. Each unit rise in zBMI was associated with an increase of 9.99 [4.37, 15.62] units of TDI (p<0.001). 43.7% of the variance in TDI was accounted for by zBMI and age. Higher adiposity in young people with type 1 diabetes is associated with higher total daily insulin requirements, even after adjusting for the potential confounding effects of age, puberty and lifestyle factors.

**P113 Emphysematous Pyleonephritis (EPN) in a patient with Diabetes Mellitus**

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EPN is a rare, severe necrotising infection characterised by gas within the renal parenchyma, collecting system or perinephric tissue. Most cases occur in diabetes mellitus patients. It carries significant mortality if not promptly treated. A 58 year old Asian female presented with three days of fever, left flank pain and vomiting. Background included type 2 diabetes treated with oral agents with poor compliance and suboptimal control. Examination revealed BP 104/59 mmHg, HR 107 bpm, RR 24 and temperature 38.9ºC, BMI 16.8kg/m2. Investigations showed plasma venous glucose 24.4 mmol/L, ß-hydroxybutyrate 4.4 mM, pH 7.33 (7.350-7.450), bicarbonate 17.6 mmol/L (22.4-25.8), lactate 1.1 mmol/L (0.5-2.0), neutrophilia (24.23 x109/L (2.0-8.0)), C-reactive protein (CRP) 377 mg/L (<7)), HbA1c 150 mmol/mol (20-42) and pyuria. Management included High Dependency Unit admission, intravenous insulin, fluids, antibiotics and inotropic support. Blood cultures grew a pan-sensitive *Escherichia coli*. Computed tomography revealed left hydronephrosis and multifocal hypoattenuating regions throughout the renal cortex with air locules within the renal pelvis. Percutaneous nephrostomy was inserted. Nephrostogram showed interval resolution of left ureteric obstruction following ten days of treatment. Nephrostomy removal was complicated by perinephric haematoma requiring percutaneous drainage. Cultured nephrostomy fluid was superinfected with vancomycin-resistant enterococcus. The patient was discharged, after 65 days, on insulin therapy and prolonged course of oral antibiotics until normalised CRP with complete resolution on imaging. Our case of EPN is unusual as the patient was successfully medically managed. Surgical intervention is generally required. EPN requires prompt diagnosis, initiation of aggressive medical management and a multidisciplinary team approach.

**P114 The impact of frailty on mental health in people with diabetes**

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While people with diabetes are more likely to be frail, the impact on mental health is currently unclear. This study assesses mental health using Irish data from The Survey of Health, Ageing and Retirement in Europe (SHARE) for people aged ≥50 years. Diabetes status was obtained from a positive answer to either “told by doctor” or diabetic medication use. Frailty was assessed using both a physical phenotype (SHARE-FI ≥3 criteria) and a 40-item frailty index (FI ≥0.25). Mental health was assessed using the twelve EURO-D index items (depression, pessimism, suicidality, guilt, sleep problems, reduced interest, irritability, reduced appetite, fatigue, concentration, enjoyment, tearfulness) with a total sum ≥4 denoting depression.From a total of1007 participants, 987 had sufficient data for SHARE-FI (≤2 missing items), and no missing data for frailty index, diabetes status or EURO-D components. A total of 88 (8.9%) participants had diabetes; of these 20 (22.7%) and 22 (25%) were frail, according to SHARE-FI and 40-item FI. Depression was significantly higher in people with diabetes (26.1% versus 17.5%; p=0.044). Among those with diabetes, depression was significantly higher in those who were frail according to both SHARE-FI (60.0% versus 16.2%; p< 0.0001) and 40-item FI (59.1% versus 15.2%; p< 0.0001). The sample was too small to test significance of EURO-D components, but all were higher in the presence of diabetes and worse when frailty was also present. In summary, frailty in people with diabetes was associated with worse mental health, underpinning the importance of screening and preventing frailty in this population.

**P115 The impact of frailty on wellbeing in people with diabetes**

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Frailty, which leads to mortality, is prevalent in people with diabetes. However, its impact on quality of life and wellbeing in this population is currently unclear. This study assesses the wellbeing in an Irish sample from The Survey of Health, Ageing and Retirement in Europe (SHARE) for those aged ≥50 years. Diabetes status was taken as a positive answer to either “told by doctor” or diabetic medication use. Frailty was defined as a score of three or more on a frailty phenotype (SHARE-FI). Quality of life was measured using an abridged version of the CASP-19 index, and low self-perceived health as an answer of “fair” or “poor” to the five category self-perceived health question (poor, fair, good, very good, excellent). A total of 972 of 1007 participants, had sufficient data for SHARE-FI (≤2 missing items), and no missing data for diabetes status, CASP-19 index or self-perceived health. Of these, 87 (9.0%) participants had diabetes with 20 (23.0%) were frail. The median, CASP-19 score was significantly lower in people with diabetes (38, IQR: 34-41 versus 40, IQR: 36-43; p=0.002). Frailty in diabetes also showed a significantly worse CASP-19 score (35.5, IQR: 25.25-37.75 vs 39, IQR: 36-42; p<0.001). Similarly, low self-perceived health was significantly more prevalent in people with diabetes (46.0% vs 18.8%; p<0.0001). This was significantly worse, if frailty was also present in addition to diabetes (75.0% versus 37.3%; p=0.003). The quality of life and wellbeing of people with diabetes was significantly worse in the presence of frailty, underpinning the importance of screening and preventing frailty in this population.

**P116 Primary Hyperparathyroidism: A Clinical Practice Audit**

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Primary Hyperparathyroidism (PHPT) is a common endocrine disorder referred to secondary care. PHPT is associated with significant morbidity and mortality. Surgical treatment with parathyroidectomy is indicated for symptomatic disease. Despite consensus international guidelines for asymptomatic PHPT management, clinical practice may differ. A retrospective observational audit was performed of consecutive patients with parathyroid hormone-dependent hypercalcaemia referred to an endocrinology service over a 2 year period. Data was anonymised. Demographics, biochemical and radiological data were recorded. Treatment (parathyroidectomy, cinacalcet or observation), surgical indications and outcomes were analysed. Of 32 subjects identified, 31 fulfilled biochemical diagnosis of PHPT. 1 fulfilled diagnosis of familial benign hypocalciuric hypercalcaemia and was excluded. 94% were female. Mean(±SD) age 63 ±17 years. Mean adjusted calcium 2.67 ± 0.22 nmol/L and mean iPTH 202 ± 392 pg/mL. 94% had 25(OH) Vitamin D assessed, of which 38% were deficient (< 50 nmol/L). 71% had 24 hour urine calcium, and 26% urine calcium excretion rate assessments. 52% had DEXA scanning performed. 55% (17) were referred for parathyroidectomy. Indications included symptoms (7), age < 50yrs (5), reduced bone mineral density (3), nephrolithiasis (1) and renal Failure (1). Concordance of parathyroid imaging was observed in 5 of 17 subjects referred for parathyroidectomy. Surgery was indicated in 7 subjects but not performed due to patient preference or medical co-morbidities. 6 % were treated with cinacalcet. Observation was undertaken in 39%. Management of PHPT varies based on patient and clinician factors. Further research is required to determine optimal outcomes in treatment of asymptomatic patients.

**P117 A synergistic duo : Combined GLP-1 Receptor Agonist and SGLT2 Inhibitor therapy in the management of Type 2 Diabetes**

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Novel glucose lowering medications improve HbA1c concentrations while reducing cardiovascular risks. With alternative mechanisms of action, the combination of glucagon-like peptide-1 (GLP-1) receptor agonists and sodium-glucose cotransporter-2 (SGLT2) inhibitors has been demonstrated in recent trials to have a synergistic beneficial effect on glycemic control, weight management and cardiovascular risk parameters.To evaluate the impact of combined GLP-1/SGLT2 therapy on glycemic control, weight and cardiovascular risks in a real life cohort of T2DM patients.For the period of 2017, all diabetes outpatient clinic letters at Naas General Hospital were examined. During this timeframe, 42 patients had a GLP-1 agonist added to an SGLT-2 inhibitor or vice versa. The impact of combining GLP-1 and SGLT-2 treatment on HbA1c, weight and cardiovascular risk factors were reviewed after a minimum period of 6 months.71.4% of patients commenced SGLT-2 inhibitor after GLP-1 agonist treatment. 87.1% of all patients saw a reduction in HbA1c over the period post commencement of combined treatment, with an average reduction of 10.9 mmol/mol in the total population. While 82.5% of patients experienced weight loss, the mean average in the total population was 3.3kg loss and a 2.4kg/m2 fall in BMI. 45.1% of patients had a fall in total cholesterol while 54.8% had a reduction in triglycerides. 57.5% of the population had a reduction in systolic blood pressure while 47.6% had a reduction in diastolic blood pressure.This data highlights the potent effect of combined GLP-1/SGLT2 therapy on glucose control and weight management in a real world T2DM population.

**P118 Audit of post-operative hypocalcaemia following thyroidectomy in a single centre**

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Internationally reported rates of transient and permanent hypoparathyroidism/ hypocalcaemia following thyroidectomy are 19-38% and 0-3% respectively. The aim of this audit was to determine the incidence of post-thyroidectomy hypocalcaemia in a single centre. Sixty-one episodes were identified between March 2015 and June 2017; 8 were excluded for not meeting audit criteria. Electronic data was reviewed to identify demographics, surgical procedure, histology and biochemistry. 52(39 female) patients were included; Mean(range) age was 47(19-72) years. Four were completion thyroidectomies, 29 lobectomies and 19 total thyroidectomies. The average maximum diameter of an excised lobe was 64(25–150)mm and the average weight was 64.1(8.3g–369.6)g . Histologically identified parathyroid glands numbered 0 in 29 cases; 1 in 6 cases; 2 in 2 cases; not recorded in 15 cases. Mean pre-operative and day-1 post-operative corrected calcium(corrCa) levels were 2.3 and 2.21mmol/L. Nineteen% of patients had hypocalcaemia(corrCa<2.15mmol/L) on post-operative day-1, 15% on day-2 and 7.6% on day-3; this was managed using a local guideline. Five patients had corrCa<2.15mmol/L on discharge. Ninety% of patients with post-operative hypocalcaemia had total thyroidectomy, 10% had lobectomy. Twenty% had 2 parathyroid glands identified histologically. There was no correlation between weight or size of the gland and hypocalcemia. Rates of post-operative hypocalcaemia following thyroidectomy in our hospital are consistent with international data. Further analysis is underway to determine whether predictors of hypocalcaemia in individual patients can be identified, and the proportion of patients in whom hypocalcaemia was permanent.

**P119 Audit of Libre flash glucose monitoring system use in young adults with type 1 diabetes mellitus**

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The Libre flash glucose monitoring (FGM) system is a new technology which has been shown both to improve glucose control and reduce time in hypoglycaemia. This audit was the first in our institution to assess use of the Libre since its introduction as a tool for blood glucose self-monitoring. This audit was a retrospective study of all patients attending the young adult diabetes clinic (age ≤24 years) on the Libre FGM for at least a month. 34 young adults were included in the study. The mean age was 19 (±1.3) years with a duration of diabetes of 8.3 (± 4.9) years. 19 (55.9%) of the patients were male. 10 (29.4%) of the patients were DAFNE (Dose adjustment for normal eating) graduates. 9 (26.5%) patients had a history of severe hypoglycaemia with 4 (11.8%) patients reporting impaired awareness of hypoglycaemia. All patients received formal Libre education prior to starting FGM. There was an improvement in HbA1c from 77.3 (±19.5) mmol/mol to 70.6 (±15.6) mmol/mol after 5.8 months of Libre use. Data on hypoglycaemia frequency was lacking. On average patients checked their blood glucose levels 4 (0-14) times per day. Most patients were satisfied with their Libre. 1 patient stopped the Libre due to a skin rash, while 3 others were unhappy with the system and stopped using it. The Libre FGM system improves self-blood glucose monitoring and glycaemic control in a cohort of young adults with type 1 diabetes attending our hospital.

**P120 Clinical characteristics and outcomes of thyrotoxic patients treated with radioiodine therapy over a 10-year period**

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Radioiodine therapy (RIT) is an effective treatment for thyrotoxicosis but outcome varies depending on dose and underlying aetiology. The aims of this study were to define our cohort of patients with thyrotoxicosis who received RIT and to assess their outcomes. This was a retrospective cohort study of thyrotoxic patients who received RIT from 2007 to 2017 in our institution. Treatment doses were empiric depending on the aetiology and goitre size. 149 patients (116 females) were included and 144 had complete data. The indications for treatment were Graves’ disease (GD) (56.9%), toxic adenoma (TA) (13.2%) and toxic multinodular goitre (TMNG) (29.9%). Patients with nodular disease were older at diagnosis compared to GD. Overall mean diagnosis thyroxine (T4) was 28.0 (±16.7) pmol/L. 116 (80.5%) patients were treated with antithyroid drugs (ATDs) prior to RIT. Patients with GD, TA and TMNG received 587.8 (±59.1) MBq, 631.6 (±76.8) MBq, 658.1 (±81.6) MBq respectively. 7(4.9%) patients had RIT twice. Median time to remission was 4 (1-121) months. After a median follow up time of 74 (1-139) months, 136 (94.4%) patients achieved cure with 93 (64.6%) becoming hypothyroid and 43 (29.9%) achieving euthyroidism. GD patients were more likely to become hypothyroid compared to the rest. No serious RIT related complications were recorded. RIT is a safe and effective treatment option for thyrotoxic patients. There was a high cure rate when high dose empiric RIT is used.

**P121 Biochemical investigation of hyponatraemia in acute medical patients over a 2 month period in a university teaching hospital**

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Hyponatraemia is a common electrolyte abnormality associated with significant morbidity and mortality in acutely ill patients. Early recognition of hyponatraemia and its cause is vital in making an appropriate diagnosis and treatment plan. Initial investigations are often not completed early in a patient’s admission, making this more challenging. Aim: To assess the frequency of identification and investigation of hyponatraemia in patients admitted under non-endocrinology medical services, via the emergency department. Methods: Patients admitted by the medical team-on-call with admission serum sodium concentration below the laboratory reference range were included. Data was obtained from the electronic laboratory database, admission notes and discharge summaries. Biochemical follow-up continued until last available serum sodium measurement. Results: 120/1424 patients (43.3% male, median age 75.5 years) were identified over 51 days, resulting in a prevalence of 8.4% among acute medical patients. 23.3%, 40% and 36.7% were classified as having severe (<125mmol/L), moderate (125-129mmol/L) and mild hyponatraemia (130-132mmol/L), respectively. 39.3%, 2.1% and 2.3% had investigations of plasma and urine osmolality and urine sodium concentration requested, respectively. Normonatraemia prior to discharge was documented in 64.3%, 77% and 79.5% respectively. Thyroid function tests and serum cortisol concentration were measured in 33.3% and 17.5% of all hyponatraemic patients, respectively. Median rise in serum sodium concentration was 11.5mmol/L, 6mmol/L, 4mmol/L, respectively. 11.7% of hyponatraemia cases had ‘hyponatraemia’ documented as a diagnosis in admission or discharge documentation with 5% identifying a specific cause. Conclusion: Hyponatraemia is under-recognised and under-investigated. It warrants further education of medical staff to ensure effective recognition and treatment.

**P122 Primary adrenal insufficiency as a cause of chronic fatigue in a patient on tyrosine kinase inhibitors for chronic myeloid leukaemia**

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Background: Tyrosine kinase inhibitors (TKI) have been implicated in the pathophysiology of primary adrenal insufficiency (PAI). Due to the vague nature of the symptoms of PAI it is often overlooked as a possible diagnosis in these patients. Here we present a case of PAI caused by either the TKI imatinib or dasatinib. This is the case of a lady diagnosed with chronic myeloid leukaemia (CML) in 2001. She was treated with the TKI imatinib until 2015, achieving complete metabolic response. Imatinib was stopped in 2015 due to symptoms of fatigue and muscle aches and pains and she was started on the alternative TKI dasatinib. This was initially tolerated well but in September 2017 she was admitted with 4kg weight loss, weakness, significant fatigue and tanned skin. Selected biochemistry: Urea: 15.8mmol/L, Sodium: 133mmol/L, Potassium 5.2mmol/L, Creatinine: 136umol/L, fT4: 14.85pmol/L, TSH: 4.30mU/L AM cortisol: 58nmol/L, ACTH: 1630pg/ml (7.2-63.3), Adrenal antibodies: negative. A synacthen test confirmed adrenal failure and adrenal imaging showed no adrenal mass and no evidence of adrenal haemorrhage. Glucocorticoid and mineralocorticoid replacement was commenced and tapered down to physiological doses. She is currently well, in remission from her CML. Discussion: Fatigue is a common side effect of TKIs. A number of papers have suggested a link between PAI and TKIs, specifically imatinib, although few case reports exist. Here we have a patient who had symptoms for a prolonged time and no other cause of her adrenal failure identified. Increased awareness of the relationship between PAI and TKIs is needed.

**P123 Metastatic small cell bladder cancer presenting with severe hyponatraemia secondary to SIADH**

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Hyponatraemia is a common emergency presentation. SIADH accounts for approximately a third of these cases. SIADH can occasionally be the presenting feature of an underlying malignancy, particularly small cell cancer (SCC). It is essential to consider a diagnosis of malignancy in cases of SIADH where the cause is not apparent. The vast majority of cases of SCC involve primary lung lesions. Here we present the case of a lady with severe hyponatraemia secondary to SIADH from metastatic bladder SCC. Case: This 77-year-old lady presented to hospital with a 4-week history of fatigue, nausea and poor concentration on a background of hypertension and a distant history of breast cancer. No causative medications. Selected investigations: Sodium: 116mmol/L, Urinary osmolality: 305mOsmol/Kg

Urinary sodium: 79mmol/L, TFTs: normal, Synacthen: normal, CT brain and thorax: No evidence of malignancy. SIADH was diagnosed and she was fluid restricted to 750ml/day. This was well tolerated and sodium improved to 136mmol/L. She re-presented 4 weeks later with vomiting and a sodium of 112mmol/L. An abdominal CT revealed bladder wall thickening and a liver lesion. A biopsy of both lesions revealed primary bladder SCC with a metastasis in the liver. SCC is a neuroendocrine tumour and can commonly produce ADH. SCC of the bladder is very rarely reported and carries with it a poor prognosis. Currently there is no clear guidance on how to fully investigate causes of SIADH. This case highlights the need to consider further imaging in patients with SIADH where intrathoracic and intracranial pathology have been outruled.

**P124 A case of primary adrenal insufficiency secondary to immunotherapy presenting with severe hyponatraemia**

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Background: Immunotherapy treatment with immune checkpoint inhibitors, such as ipilimumab and nivolumab, significantly improves survival in a number of cancers. Immune-related adverse reactions, including endocrinopathies, are common and if not readily recognized can result in significant morbidity and mortality. Here we discuss a lady on this combination presenting with severe symptomatic hyponatraemia. A 46-year-old lady presented to the emergency department with myalgia, dizziness, salt craving and vomiting over the previous 10 days. She has been treated with nivolumab and ipilimumab for metastatic melanoma having completed 3 cycles before presenting to the ED. Selected biochemistry:Sodium: 115mmol/L, Potassium: 6.0mmol//l, Random cortisol: 121nmol/L, Urinary osmolality: 632mOsmol/Kg, Urinary sodium 81mmol/L, ACTH: 76pg/mL (7.2-63.3) – checked after steroids had been initiated. Primary adrenal failure (PAF) was diagnosed based on a failed synacthen test in the context of a raised ACTH. IV steroids and fluids were initiated in ICU. She was discharged when well on oral hydrocortisone and fludrocortisone. Discussion: Secondary cortisol deficiency due to hypophysitis occurs in up to 9% of patients treated with CTLA-4 inhibitors. PAF is rare and only a few case reports have been published. Differentiating between primary and secondary adrenal failure is imperative, as mineralocorticoid replacement is required in the former. The pathogenesis of PAF in the context of immunotherapy is unclear. Cross sectional imaging in the acute phase might reveal bilateral adrenal enlargement. Hormonal deficiencies in PAF are usually permanent and immunotherapy can be continued.

**P125 Comparison of a direct assay against the Friedewald Formula results for LDL-C in patients with Type 2 Diabetes Mellitus.**

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Low-density lipoprotein cholesterol (LDL-C) serves both as a cardiovascular disease risk predictor and treatment target. In the vast majority of worldwide laboratories, LDL-C is determined by the Friedewald Formula - the clinical standard since it was first proposed by Friedewald *et al.* in 1972. Despite this, the equation has its limitations. However, for direct (also called homogenous) LDL-C assays to replace the widespread utilisation of the Friedewald Formula, such assays would need to express a clear analytical performance improvement. We verified the Roche Diagnostics® direct LDL-C assay. We analysed both Internal Quality Control and 58 samples from patients with Type 2 Diabetes Mellitus using the direct assay and the calculated results. The two methods were compared by means of linear regression, scatter plots and difference plots. Difference plots identified that there was a large percentage difference in results at low concentrations of LDL-C (< 2.0 mmol/L). This was exacerbated when serum triglyceride levels were raised (> 2.0 mmol/L). The Roche Diagnostics® direct LDL-C assay was found to have an overall co-efficient of variation of < 2.87 %, which was unsurprisingly better than that of the Friedewald Formula which had an overall co-efficient of variation of 5.08 %. This study is consistent with the inaccuracy of the Friedewald Formula at low concentrations of LDL-C. This may give the false impression that some patients are achieving their desired LDL-C. As External Quality Assurance schemes do not distribute many samples with LDL-C < 2.0 mmol/L this issue is not well recognised.

**P126 The comparison of the Roche direct LDL-C assay against the routine Friedewald Formula in patients with Type 2 Diabetes Mellitus.**

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Low-density lipoprotein Cholesterol (LDL-C) serves both as a CVD risk predictor and a treatment target. In the vast majority of worldwide laboratories, LDL-C is determined by the Friedewald Formula, the clinical standard since it was first proposed by Friedewald *et al*. in 1972. However, the equation has its limitations such that LDL-C is not reported when the Triglycerides are >4.49 mmol/L. For direct, or homogenous, LDL-C assays to replace the Friedewald Formula, they would need to have much improved analytical performance. LDL-C was determined in 58 samples from Type 2 Diabetes Mellitus patients using both a verified direct assay and the Friedewald Formula (mmol/L): Calculated LDL-C = [Total Cholesterol] – [High-density lipoprotein cholesterol] – [Triglycerides]/2.2. Both sets of results were compared by means of linear regression, scatter plots and difference plots. Correlation was excellent (R2=0.99). The linear regression equation was [Friedewald Formula result] = 1.024 [Direct LDL-C] + 0.29 mmol/L. The direct LDL-C mean was 2.506±1.24 mmol/L while the calculated mean result was 2.166±1.20 mmol/L, mean difference 0.34±0.24 mmol/L, p <0.001 by paired t-test. When samples with [Triglycerides] ≥2.0 mmol/L were examined, the mean difference increased to 0.47±0.33 mmol/L. This study is consistent with the inaccuracy of the Friedewald Formula at low concentrations of LDL-C and raised triglycerides. Friedewald Formula results <2.0 mmol/L may be negatively biased such that this may give the false impression that some patients are achieving their desired LDL-C. As External Quality Assurance schemes do not distribute samples with LDL-Cholesterol <2.0 mmol/L this issue is under-recognised.

**P127 Limitations in basic activities of daily living and instrumental activities of daily living in frail individuals with diabetes**

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Frailty is associated with diminished ability to perform everyday activities of daily living (ADL) and an increase in adverse outcomes for individuals with diabetes. This study investigated the distribution of limitations in basic ADL (BADL) and instrumental ADL (IADL) in older individuals with frailty and diabetes. A secondary analysis of the Survey of Health, Ageing and Retirement in Europe (SHARE) wave-2 was conducted. Participants from Ireland with data on diabetes status and frailty, identified by SHARE- Frailty Instrument (SHARE-FI), were included. The numbers of BADL (n=5) and IADL (n=7) limitations were defined by adding activities together e.g. difficulties in dressing and eating for BADL; and difficulties in using a map and managing money for IADL. A total of 992 individuals aged ≥50 were included in the analysis. The mean age of the participants was 64.72±9.65, a total of 92 (9.3%) were frail, and 88 (8.9%) had diabetes. There was a significant difference in the proportion with at least one limitation in BADL and IADL in individuals with diabetes compared to those without diabetes (65.91% versus 38.49% p<0.001 and 34.09% versus 14.60%, p<0.001). Frail individuals with diabetes had a significantly higher proportion of at least one limitation in their ADL and IADL, compared to non-frail individuals with diabetes (70% versus 23.52% p<0.001 and 100% versus 55.88%, p<0.001). Diabetics and particularly frail individuals with diabetes are more likely to have impairment in their ADL affecting their independence. Prevention and early identification of frailty in older diabetics is important to prevent functional decline.

**P128 Pre-frailty in working older adults with and without diabetes**

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Retirement age is increasing in many countries and it well recognised that an ageing workforce creates challenges. This study investigates the prevalence of pre-frailty in working older adults with and without diabetes, and also presents their concerns regarding health limits and plans for early retirement. We conducted a descriptive and comparative analysis of data from the second wave (2007) of the Survey of Health, Ageing and Retirement in Europe (SHARE). Participants from Ireland with available data on frailty and diabetes status were included. Pre-frailty status was defined by a score of one or two on a modified version of physical phenotype (SHARE-FI). Responses for self-reported questions in relation to diabetes status, health factors limiting work and early retirement plans were used for analysis. A total of 300 of 868 individuals had complete data for frailty and diabetes status, and were employed or self-employed (mean age 57.94±5.45). Of these, 107 were pre-frail (35.7%), of which six (5.6%) had diabetes. There was a significant difference in the proportion of those reporting “being afraid of health that limits working before retirement” in pre-frail adults with diabetes compared to those without diabetes (p=0.03). There was no statistically significant difference in “looking for early retirement” between the pre-frail group with diabetes and the non-frail group without diabetes (p>0.05). Pre-frailty was common in older working adults. Screening and preventing pre-frailty may improve work-related outcomes. Diabetes may be limiting work ability; however, the sample size was small suggesting the need to examine larger samples to confirm this finding.

**P129 Thyroid storm associated with acute ischaemic stroke**

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Thyroid storm is a rare condition characterised by exaggerated clinical manifestations of thyrotoxicosis with mortality rate of 8 to 25 %1,generally associated with an acute precipitating eventA 39 year old Romanian lady, with background of depression, was found collapsed at home with dense right-sided hemiparesis and aphasia. NIHSS was 28/42. Physical examination revealed BP 141/71 mmHg, HR 170 bpm, RR 36/minute, Temp 36.5°C, scleral icterus, exophthalmos, moderate-sized goitre and pitting oedema. Electrocardiogram confirmed fast atrial fibrillation. Computed tomography brain scan and angiography revealed established left MCA infarction with thrombus in M1 segment. Chest X-ray showed features consistent with pulmonary oedema. Relevant investigations showed Ft4 57 pmol/L (9.0-20.0), Ft3 17.3 pmol/L (2.6-4.9),TSH <0.01 mu/L (0.35-4.94), Bilirubin 182 μmol/l (5-24),PT 19.8 seconds, BNP 1028 ng/L (<135). Japanese Thyroid Association Score was TS1 and BWPS score 65. Management in the High Dependency Unit included intravenous (IV) Esmolol, IV hydrocortisone 100mg TDS, IV furosemide, carbimazole 60 mg and Aspirin 300 mg. Doses were tapered according to clinical and biochemical responses. She was discharged after 35 days to offsite rehab on carbimazole 40 mg, Propranolol 40mg BD and Dabigatran 150mg BD. Discharge results showed TSH <0.01 mu/L, Ft4 14.9 pmol/L, TPO 1194.3 IU/ml , TRAB 56 IU/L .Dense right hemiparesis and dysphasia persisted. This case of thyroid storm secondary to Grave’ disease highlights the hypercoagulable state associated with thyrotoxicosis. Management of thyroid storm requires prompt recognition and a multidisciplinary approach.

**P130 Alemtuzumab-Related thyroid dysfunction in patients with relapsing-remitting Multiple Sclerosis**

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Alemtuzumab is a humanized monoclonal anti-CD52 antibody that is approved for the treatment of active Relapsing Remitting Multiple Sclerosis (RRMS). Thyroid dysfunction secondary to immune reconstitution occurs up to 41% of patients1 Objectives:To determine 1.frequency of thyroid function testing in RRMS patients who received Alemtuzumab and 2. type and course of thyroid dysfunction. Methods: A retrospective analysis of thyroid function tests (TFTs) and ultimate thyroid diagnosis was reviewed in all patients who had received Alemtuzumab (according to established Alemtuzumab Intravenous protocol, version 5) for RR-MS between March 2014 to November 2018. Results : 14 patients received Alemtuzumab, 79% were female. 57% met the current protocol recommended frequency of TFT monitoring (three monthly). 29% developed thyroid dysfunction. Median onset was 12 months (range 12-14) following first dose of Alemtuzumab. Graves’ disease was the most common thyroid dysfunction (75%), all of whom had positive TRAB and TPO antibodies. Two patients with Graves’ disease received antithyroid drugs and became hypothyroid requiring L-thyroxine replacement. One patient that developed thyroid dysfunction had received interferon treatment previously. Of those with Graves’ disease 67% had a smoking history. One patient, with positive TPO, had subclinical hyperthyroidism that spontaneously resolved. Conclusion: Thyroid dysfunction, specifically Graves’ disease, is common in our cohort of Alemtuzumab-treated RRMS patients. Special attention is required to strict monitoring of TFTs in this patient cohort.

**P131 Risk factors associated with progression to referable diabetic retinopathy (RDR): A Type 2 Diabetes Mellitus (T2D) cohort study in Ireland.**

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Objective: To determine factors associated with progression to referable diabetic retinopathy (RDR) in people with type 2 diabetes (T2D) in Ireland. Research Design and Methods: Dynamic cohort of 2770 T2D patients recruited between April 2005 and July 2013. Systemic factors [systolic and diastolic blood pressure (BP); glycosylated haemoglobin (HbA1c); lipid levels; body mass index (BMI)] and DR grading were serially evaluated at four-monthly and yearly intervals, respectively. Associations between updated risk factors (most recently recorded value, and rate of change in value between pairs of consecutive systemic evaluations) and development of RDR were estimated using proportional hazards models.

Results: There was a four-fold increased risk of progression to RDR when there was minimal retinopathy, when compared with no retinopathy, at the initial grading (hazard ratio (HR) 4.02, [confidence interval (CI) 2.80, 5.78] p<0.001). Higher most recently recorded values of HbA1c were associated with increased risk of RDR [HR 1.22, (CI 1.11, 1.34) p<0.001]. Higher most recently recorded systolic BP (HR 1.29 [CI 1.15, 1.45] p<0.001) and most recently recorded triglyceride levels (HR 1.10 [CI 1.03, 1.18] p=0.004) were also associated with increased risk of referral. Conclusions: Overt retinopathy was strongly associated with increased risk of RDR. Modest associations between systemic factors and risk of referral were also detected. A significant finding is that unlike UKPDS (50) where systemic hypertension correlated to incident cases of newly detected retinopathy but not progression to RDR, we found elevated systolic BP correlated with increased risk of referral.

**P132 Efficacy and safety of initial combined therapy with metformin plus a dipeptidyl peptidase-4 inhibitor versus metformin monotherapy in type 2 diabetes mellitus: a systematic review and meta-analysis of phase 3 randomised controlled trials**

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Metformin monotherapy is often insufficient to achieve or sustain glycaemic targets in people with type 2 diabetes mellitus (T2DM). Therefore, we aimed to assess the efficacy and safety of initial combined therapy with metformin plus a dipeptidyl peptidase-4 **(**DPP-4) inhibitor versus metformin monotherapy alone in people with T2DM. Phase 3 randomised controlled trials (RCTs) comparing initial combined therapy with metformin plus a DPP-4 inhibitor versus metformin monotherapy were searched using PubMed, Cochrane Library and www.ClinicalTrials.gov databases. A random effects meta-analysis was performed using RevMan version 5.3 and STATA version 14.2. Twelve RCTs met the inclusion criteria. Compared with metformin monotherapy alone, initial combined therapy was associated with a significant reduction in HbA1c (mean difference [MD]: -0.47%; 95% confidence interval [CI]: -0.59, -0.35; p<0.01) and fasting plasma glucose (MD: -0.68mmol/l; 95% CI: -1.03, -0.34; p<0.01), and a higher attainment of target HbA1c (<7%: odds ratio [OR]: 2.34; 95% CI: 1.94, 2.82; p<0.01; and ≤6.5%: OR: 2.18; 95%CI: 1.77, 2.68; p<0.01). There was no statistically significant difference between both treatment arms in the risk of gastrointestinal adverse effects, severe hypoglycaemia, upper respiratory tract infection and discontinuation due to adverse events. In summary, initial combined therapy with metformin plus a DPP-4 inhibitor is not only safe and tolerable but is significantly more efficacious than metformin monotherapy for treatment of T2DM.

**P133 Please don’t sugarcoat it: An avoidable case of Euglycaemic DKA in the setting of a SGLT-2 Inhibitor**

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Euglycaemic DKA (EuDKA) without hyperglycaemia is rare but increasing cases are reported in patients taking SGLT2 inhibitors. A 53 year old, Type 2 Diabetic was admitted for an elective cholecystecomy.  His diabetic medications included Metformin 1g BD, Linagliptan 5mg OD and Empagliflozin 25mg OD PO. The patient’s surgery was successfully but he had still not recovered on day 3 post-op. He reported to his surgical team that he was very nauseous and was “feeling dreadful”. His surgical site looked clean and he had a CT Abdomen, which was normal.  He then had a Venous Blood Gas that showed a severe metabolic acidosis (Ph: 7.04, HCO3: 4.3, pCO2: 2.16, Lactate: 1.93) with a raised anion gap of 18. His Blood Glucose was only 13mmol/l however his blood ketones were 4.5. The patient was promptly diagnosed as having a severe euDKA and started urgently on the DKA treatment protocol, his SGLT-2 inhibitor was held and he was transferred to a High Dependency Unit. The patient made a full recovery and was discharged a week later. SGLT-2 Inhibitors are effective drugs for use in Type 2 Diabetics. They promote HbA1c reductions, weight loss as well as improved cardiovascular and renal outcomes. This case demonstrates the dangers posed by poor education about these drugs among our Diabetic patients and non-diabetologist colleagues. Poor education about the importance of stopping SGLT-2 Inhibitors when patients are unwell, fasting or going for surgery can lead to hospitals admissions, prolonged hospital stays and potential morbidity and mortality.

**P134 Risk factors and long-term consequences of new-onset diabetes after renal transplantation.**

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New-onset diabetes after transplant (NODAT) confers risk of diabetes-related complications as well as a threat to graft function and overall patient survival. The reported incidence of NODAT varies from of 14-37% in renal transplant recipients worldwide however, NODAT is yet to be studied in the Irish renal transplant population.The primary aims of this project were to estimate the incidence, to determine associated risk factors and to assess the long-term consequences of NODAT on graft survival and patient survival in the Irish renal transplant population. Retrospective data collection of 412 renal transplant recipients over a 12-year period was performed to record presence of NODAT, baseline characteristics and graft survival. Preoperative risk factor screening was reviewed in a subgroup of patients to determine concordance with the International Consensus Guidelines. Statistical analysis was performed using Kaplan Meier survival functions estimating NODAT detection over time, graft and patient survival. Risk factor association was determined using Cox proportional Hazards models. NODAT incidence was 9.97%. Risk factors for developing NODAT were recipient age and body weight. Risk of NODAT was highest in the first year post-transplant. NODAT did not confer decreased graft or patient survival. Preoperative biochemical testing to identify risk factors for development of NODAT was suboptimal. NODAT incidence in the Irish renal transplant population is slightly below international figures. This project has prompted a change in national guidelines to meet international standards, which may result in improved detection of diabetes post transplant.

**P135 A case report of propylthiouracil-induced antineutrophil cytoplasmic antibody-associated vasculitis and agranulocytosis in a patient with Graves’ disease**

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This case report is the first to describe concomitant agranulocytosis and anti-neutrophil cytoplasmic antibody (ANCA)-associated vasculitis as an adverse effect of propylthiouracil treatment for Graves’ disease. The exact pathogenesis of ANCA induction and vasculitis in patients taking propylthiouracil remains to be understood.A 42-year-old female with Graves’ disease presented to the emergency department with a two-week history of fevers, night sweats, transient lower limb rash, arthralgia, myalgia and fatigue. She had been taking propylthiouracil for eighteen months prior to presentation, having previously been intolerant of carbimazole. On admission, neutrophil count was 0.36 x109/L and immediately propylthiouracil was stopped. Treatment with broad spectrum antibodies and one dose of granulocyte colony-stimulation factor, resulted in a satisfactory response. On further investigation ANCA level was raised with dual positivity for proteinase 3 and myeloperoxidase. There was no evidence of end-organ damage secondary to vasculitis and the patient’s constitutional symptoms resolved completely on discontinuation of the drug precluding the need for immunosuppressive therapy.

This case report describes late-onset agranulocytosis secondary to antithyroid drug use signifying the importance of continued vigilance and patient education throughout the course of PTU treatment. Secondly, it describes ANCA-associated vasculitis, which is a rare adverse effect of antithyroid drug use. Timely discontinuation of the drug is vital in reducing end-organ damage and the need for immunosuppressive therapy. Similarities in the pathogenesis of both these adverse effects may explain why this patient experienced them concomitantly and offers insight into an improved understanding of vasculitis and agranulocytosis.

**P136 Metabolic encephalopathy secondary to diabetic ketoacidosis**

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A 35-year-old man presented to the emergency department in a confused and agitated state. His past medical history was significant for poorly controlled type 1 diabetes, complicated by background diabetic retinopathy. He was taking basal/bolus insulin and had a history of diabetic ketoacidosis (DKA) eleven years prior. He also had multiple sclerosis however disengaged with neurology services and was non-compliant with interferon therapy.

Biochemistry revealed DKA (pH 7.17, blood ketones 8mmol/L and blood glucose 26mmol/L). Alcohol and toxicology screens were negative. There were no significant abnormalities in other laboratory investigations. HbA1c was 70mmol/mol (8.5%). Analysis of cerebrospinal fluid revealed an elevated protein at 61 mg/dl with normal glucose, erythrocytes and leucocytes. Viral PCR was negative. Neuroimaging revealed temporal lobe abnormalities consistent with an encephalopathic process. The patient underwent extensive investigation of autoimmune, infective, metabolic, toxic and paraneoplastic encephalopathy, with no obvious cause demonstrated. Temporal lobe biopsy showed marked astrocytic gliosis without evidence of vasculitis, inflammation, infarction or neoplasia. Electroencephalogram was consistent with an encephalopathic process. In addition to his initial treatment for DKA, the patient was also given high dose intravenous thiamine and a reducing regimen of chlordiazepoxide. He received empiric antiviral treatment. Subsequent treatment was largely supportive, involving a multidisciplinary team. Despite neuro-rehabilitation, the patient’s cognitive function remained impaired and he ultimately required residential care. DKA poses a serious and significant neurological risk to patients with diabetes mellitus. To our knowledge this is the second case report of metabolic encephalopathy as an acute complication of DKA.

**P137 A case of Phaeochromocytoma induced diabetic ketoacidosis (DKA) leading to the diagnosis of Multiple Endocrine Neoplasia Type 2A (MEN2A)**

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MEN2A is a rare condition characterized by phaeochromocytoma, medullary thyroid carcinoma and primary hyperparathyroidism. Phaeochromocytomas have been shown to impair glucose tolerance via direct inhibition of insulin secretion and, rarely, to precipitate overt diabetes mellitus. We report a case of a patient who presented with DKA and classical symptoms of phaeochromocytoma, leading to the subsequent diagnosis of MEN2A. A 36 year old gentleman presented with 8kg weight loss, palpitations and diaphoresis over an eight week period. He had no known past medical history. He was noted to be hypertensive (179/109mmHg) and tachycardic (98bpm) on admission. DKA was also confirmed(pH 7.22, capillary glucose 27.2mmol/l, ketones 5.2)and he was treated with the DKA protocol before switching to subcutaneous insulin. He required 110 units of insulin daily to maintain euglycaemia. Anti-GAD antibodies were negative. A 24 hour urine collection for metanephrines was collected as part of the investigation of a secondary cause for hypertension. Metanephrine and normetanephrine were elevated at 84172ng/l(141-1289ng/l) and 36147ng/l(440-2960ng/l) respectively. A CT scan of abdomen and pelvis and MIBG scan confirmed a left sided phaeochromocytoma. He underwent a laparoscopic adrenalectomy and blood pressure and blood glucose returned to normal levels within 24 hours allowing discontinuation of antihypertensive medication and insulin. Genetic testing confirmed MEN2A(RET 634 mutation)and subsequently, diagnoses of medullary thyroid carcinoma and primary hyperparathyroidism were made. This gentleman’s dramatic presentation demonstrates the need for clinicians to consider a diagnosis of phaeochromocytoma in a young patient presenting with a new diagnosis of diabetes, hypertension and symptoms of phaeochromocytoma.

**P138 Diabetic Ketoacidosis (DKA) Audit 2017-2018**

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DKA is a serious acute complication of diabetes. We focused on presentations of DKA to Tallaght University Hospital (TUH) over 2018 and compared results to 2017. This audit is integral to establishing the consistent adherence of the DKA Protocol and builds on research documented since the protocol initiation in 2014. The aim is it continuously improve the standard of care. There were 41 cases of DKA in 2018. We gathering information was via each patient’s medical records on file and from the central TUH patient databases. The data was compiled then inputted into an excel spreadsheet for data analysis. Multiple factors were analysed, compared to 2017 there was 55% reduction in time from registration to checking initial blood glucose and ketone levels (49minutes to 22minutes). IV insulin and fluids should be commenced within the hour of registration. There was less compliance compared to 2017, where 52% of patients were started on IV insulin within the hour unlike 27% in 2018. Similarly, 58% of patients were started on fluids within the hour in 2017 and only 36% in 2018. Glucose levels were slower to normalise compared to 2017 and took 1.47hours longer. Timing of ketosis resolution improved, 94% of cases resolved within 24hours in 2018, unlike 88% cases in 2017. Rebound rates of hyperglycaemia decreased by 15% compared to 2017. The audit concludes continuous yearly review of DKA protocol is overall improving patient care. Promotion of faster initiation of IV insulin and fluids will be the aim of 2019.

**P139 Efficacy and safety of a ketone-based IV insulin protocol for diabetic ketoacidosis over a 4 year period**

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Introduction: Diabetic ketoacidosis is a serious complication of patients with Type 1 diabetes. A new protocol, guided by international best practice, was introduced in 2014, based on ketone-determined IV insulin infusion. Here we present analysis of the effectiveness and safety of this new protocol over a 4 year period, from annual audit. Methods: Retrospective audits were carried out for the calendar years 2015 to 2018, with comparator audit of 2012-13 prior to the implementation of the new protocol. Standard demographics, biochemical data, adverse events, and key performance markers are compared in Microsoft Excel utilising descriptive statistics. Results: Annual numbers ranged from 32 to 51, with average ages from 36 to 45. Average HbA1C was stable around 10% (8.9 – 10.8%). Acidosis levels were steady as were ketones and CBG. There was an improvement in rates of hypoglycaemia over time (43% in 2016, 20% in 2017, 7% in 2018), as well as hypokalaemia (53% in 2016, 37% in 2017, and 30% in 2018). Overall times to checking CBG/ketones and commencing IV fluids/insulin improved, particularly compared to 2012-13 cohort. Median time on IV insulin decreased (33.5 hours in 2012-13 to 22.25 hours in 2018). This is not reflected in any significant reduction in average length of stay (avLOS). Conclusion: The implementation of the new protocol in 2014 lead to an improvement in adverse events and a reduction in the time on IV insulin for patients with DKA. The next goal should be to translate this into a reduction in their avLOS.

**P140 Diabetic ketoacidosis at Tallaght University Hospital – biochemical and outcome measures in 2018.**

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Introduction: An updated protocol for the management of diabetic ketoacidosis was implemented in 2014; subsequently annual audits have been carried out to evaluate the effectiveness of the protocol and its adherence. Here we present the biochemical, management and outcome data. Methods: All patients discharged between January 1st and December 31st 2018, with the primary diagnosis of DKA on the HIPE database were included. Information was gathered using medical records and hospital systems, collated and analysed using Microsoft Excel. Results: Forty two patient presentations were included for analysis. Average pH was 7.2, with average ketones of 5.2 mmol/L and blood glucose of 23 mmol/L. All patients were managed using the hospital DKA protocol, and all had serum ketones measured; 55% had initial pH via venous blood gas. Average time to measurement of capillary glucose and ketones was 14 minutes for each, while IV fluids and insulin were commenced at 70 minutes and 101 minutes on average, respectively. The average time on IV insulin was 24 hours and 53 minutes (median 22 hours 33 minutes). The average length of stay was 5.8 days (median 3 days). Hypoglycaemia occurred in 7% of patients, and hypokalaemia in 30% (24% mild, 6% severe). Six patients were admitted to ICU. There was no mortality from DKA in 2018. Discussion: Analysis of our cohort reveals presenting severity is stable and on average mild, based on pH and ketone levels. Our management results in a low level of adverse events, although speed of treatment commencement could be improved.

**P141 Diabetic ketoacidosis at Tallaght Hospital – demographics and presenting features in 2018.**

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Introduction: An updated protocol for the management of diabetic ketoacidosis was implemented in 2014; subsequently annual audits have been carried out to evaluate the effectiveness of the protocol and its adherence. Here we present the predominant demographic, clinical, and presenting features seen from the cohort presenting in 2018. Methods: All patients discharged between January 1st and December 31st 2018, with the primary diagnosis of DKA on the HIPE database were included. Information was gathered using medical records and hospital systems, collated and analysed using Microsoft Excel. Results: Forty-two cases met criteria for DKA; median age was 42 years, 54% were female, and the average HbA1C was 9.9%. Median time since diagnosis was 6.6 years and median time since last DKA episode was 370 days. 71.4% of patients presented with vomiting and/or abdominal symptoms. The average duration of symptoms was 4 days (median 1 day), with 59% of patients suffering symptoms for 24 hours. The most common precipitant causes of DKA were missed insulin (33.3%) and alcohol use (33.3%), often coinciding, followed by infection (16.6%). Seven patients (16.6%) were newly diagnosed on admission. Discussion: DKA is a serious and acute diabetic complication, affecting a wide range of patients with Type 1 diabetes. Consecutive audits of TUH presentations continue to show compliance with insulin often secondary to alcohol is a major cause, with rapid onset and abdominal symptoms predominating. This information is useful in educating patients on avoidance or early identification of this dangerous condition.

**P142 Profound hypoglycaemia in advanced malignancy: Two cases demonstrating different causative mechanisms.**

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We present two patients with profound hypoglycaemia in the setting of advanced malignancy, demonstrating two different aetiologies, highlighting both the diagnostic and management challenges. Case one is a forty four year old female diagnosed with a metastatic neuroendocrine tumour (NET). Initial biopsy confirmed a grade one, well differentiated NET. However, the following year, the tumour had progressed to an aggressive grade three NET associated with profound hypoglycaemia. Whilst initially gastrin secreting, the tumour was now producing insulin. A documented lab glucose of 1.9 mmol/l was recorded along with an inappropriately elevated insulin of 30.5 mU/L and c-peptide of 4.9 ug/l. Despite chemotherapy with everolimus, somatostatin analogue therapy with pasireotide and hepatic artery embolization she continued to deteriorate. Case two is a seventy five year old female under the care of oncology with locally advanced uterine carcinosarcoma. In the last month of her illness she began to develop profound hypoglycaemia. Low lab glucose associated with an appropriately suppressed insulin and c-peptide level were recorded on several occasions. Stimulated cortisol levels were normal. Subsequent work-up revealed an elevated insulin-like growth factor II to insulin-like growth factor I ratio of 21.8 (normal range <10). This was in keeping with non-islet-cell tumour hypoglycaemia (NICTH). Both cases highlight the importance of recognising tumour-induced hypoglycaemia. The second case, in particular, demonstrates that some tumours are capable of producing hypoglycaemia by methods other than endogenous hyperinsulinism, and although rare, it is useful to check other regulatory peptides when hyperinsulinaemia is not present in the setting of hypoglycaemia.

**P143 An audit of thyroid function test requests in Sligo University Hospital over 5 consecutive days in 2019.**

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Background: There were 57,000 requests for serum thyroid function testing (TFT) in Sligo University Hospital (SUH) laboratory 2016, rising to 64,000 in 2018, costing 5% of the laboratory budget annually. The IT system in place does not flag repeat sampling, nor is there screening based on clinical details. HSE laboratory guidelines for appropriate testing of TFTs are available online, as are the British Thyroid Society Guidelines (BTS). This study is an audit of all requests for TFTs SUH laboratory over a 5 day period (Monday-Friday). Sample details were obtained from the laboratory IT database, and recorded referring location, indication of the test (if any) and whether or not the indication was in compliance with HSE or British Thyroid Association (BTS) Guidelines. Results: There were 1141 total request over 5 days, 929 (81%) from general practitioners (GP) and 212 (19%) from SUH. Of these 212 Sligo hospital requests, 88 were inpatient requests, 35 from the acute assessment unit, 31 from renal outpatients, 42 from general medical outpatients and 16 from the emergency department.152 (71.6%) of the hospital requests included a clinical indication, with 21 (14%) compliant with guidelines.432 (46.55%) requests from GPs included a clinical indication, with 73 (17%) compliant with guidelines. Conclusion: Results shows very high number of requests received with no clinical indication documented, of which few were compliant with the guidelines. We propose the introduction of formal hospital TFTs Request Guidelines followed by appropriate educational support sessions for clinicians and re-audit.

**P144 Satisfaction rating of peri-operative guidelines for management of diabetes mellitus in peri-operative period**

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Background: People with diabetes have increased mortality and morbidity in the perioperative period. In Sligo University Hospital we introduced written guidelines to manage diabetes perioperatively in 2016 based on the NHS guidelines. This is a paper based, hand delivered, questionnaire based survey assessing the ease of use and health care professional satisfaction and experience of the use of these guidelines. Results: There were 71 respondents, 40 (56%) surgical ward nurses, 24(33.8%) theatre nurses and 7 surgical junior doctors. 90% of respondents feel more confident,45% participant feel very confident to manage the peri-operative diabetic patients, and 96% feel the guidelines helps to manage patients with diabetes in peri-operative period more safely. 69% are using the guidelines every time, 63.4% reported less frequent cancellations of surgery for hyperglycaemia since the introduction of guidelines.5.6% contact the diabetes nurses every time which is improved from 23% before the introduction of the guidelines and 85% reported that the incidence of insulin errors has been reduced, and 80.3 % reported a reduction in the incidence of perioperative hypoglycaemia.However 18.3% reported increased length of time involved in getting patients ready for surgery, and 32.4% suggest no change in the length of time.36.6% think guidelines have reduced the overall length of stay. Conclusion: use of a written guideline document improves staff confidence in managing patients with diabetes in the perioperative periods, less cancelations of surgery, less insulin errors, and less use of the diabetes nurse time but it can take slightly longer to get patients ready for theatre.

**P145 Is Toujeo is safe in pregnancy? Comparison of Toujeo and Lantus for treatment of diabetes mellitus in pregnancy**

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Background: NPH and detemir are licenced for use in pregnancy, use of glargine (Lantus®) is well established, albeit out of licence, and to date there are no studies published on the newer glargine derivative Toujeo® looking at the safety and efficacy in pregnancy. In Sligo University Hospital we performed a retrospective, observational study comparing pregnant women receiving Lantus® and those receiving Toujeo® Results:13 women received Toujeo® (10 with gestational diabetes (GDM), 3 with Type 1 diabetes and 10 received Lantus® with GDM.At baseline mean maternal age was largely similar in both group (34 years),but mean gestational age at diagnosis of GDM (25 weeks) and mean maternal BMI was higher in Toujeo® group (25 kg/m2, p=0.08).The requirement of additional hypogylycemics(metformin and short acting insulin) was higher in the Toujeo® group than Lantus® (55% and 25%). 2 patients in the Toujeo® group required insulin infusion during delivery compared to none of Lantus group.There were 4 episodes of moderate hypoglycaemia(blood glucose level<4.5 mmol)during antenatally in Lantus® group compared to Toujeo®.The incidence of emergency delivery , caesarean section, baby weight and Apgar scores at 1 and 10 minutes were similar in both groups.Conclusion: use of Toujeo during pregnancy was non-inferior to Lantus® but use of additional hypoglycaemic agents antenatally in the Toujeo® group, while the incidence of moderate hypoglycaemia was higher in Lantus® group.

**P146 Comparison of management of gestational diabetes mellitus between 2008-2012 and 2016-2018 in Sligo university hospital after introduction of written guidelines.**

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Background: Guidelines for the management of gestational diabetes focus on outpatient care but contain little detail on how to manage women during labour. In Sligo University Hospital there was an adhoc approach to the use of insulin infusions during labour until the introduction of a conjoint guideline document in Diabetes in 2016. We propose the use of standard variable rate intravenous insulin infusion (VRIII) in women receiving insulin during pregnancy, and those with capillary blood glucoses above 7mmol/L during established labour. This study looks at the frequency of the use of VRIII during labour, as well as the maternal and foetal outcomes pre and post introduction of the guidelines. 206 patient episodes (before the guidelines) were compared with the 182 (after).At baseline there was no difference between the groups with maternal weight at diagnosis, weeks of gestation at diagnosis, maternal age, maternal Hba1c, gestation age at delivery. The frequency of the use of VRIII during labour was reduced from 14% to only 1.4% after introduction of written guidelines.There was no significant difference in Apgar at 1 minute (p=0.33) and 10 minutes, (p=0.16) and baby weight at delivery (p=0.16) between the groups. Of note the number of women receiving pharmacotherapy during pregnancy increased from 9 to 15% (insulin) and 20% to 42% (metformin) in the groups. The introduction of the guidelines facilitates uniformity of safe care with less use of VRIII and no detrimental effect on foetal or maternal outcomes. The use of pharmacotherapy likely represents tightening of glycaemic targets in recent years.

**P147 Frequency of Non-Alcoholic Fatty Liver Disease in Type 2 Diabetes**

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Introduction: Non-alcoholic fatty liver disease (NAFLD with potential progression to Non-alcoholic steatohepatitis (NASH) and liver cirrhosis is increasingly recognised as a complication of Type 2 Diabetes (T2DM). In busy general diabetes clinics however screening tests, FIB-4 and NAFLD scores to identify patients at risk of NASH are not part of routine clinical practice. Methods: We screened 225 consecutive T2DM patients with both the NAFLD and FIB-4 scoring systems to identify the number of patients who require further liver tests or referral to a hepatologist. 26 patients were excluded due to higher than recommended alcohol intake.as their alcohol intake. FIB4 score was calculated in 199 patients and NAFLD score in 184 patients. A FIB4 score >3.25 and NAFLD score>0.676 are indicative of fibrosis. FIB4 score between 1.45-3.25 and NAFLD score between 0.675 and -1.45 are indeterminate and require further investigation. Results: 147 of the patients (79.8%) have a high NAFLD score > -1.45) 97 (65.9%) were males, 89(60.5%) were obese and 116(78.9%) were over 60 years of age. 62 of the 199 patients (31%) have a high FIB4 score of >1.45. 52(83.8%) were males,38(61.2%) were obese and 57(91.9%) were over 60 years. Male sex, BMI greater than 30kg/m2 and over 60 years were associated with higher FIB4 and NAFLD score. Conclusion: Our audit confirms a high prevalence of NAFLD in patients with T2DM and the need to implement screening tests within the diabetes clinic to identify which patients require further liver investigation or referral to a hepatologist.

**P148 Diabetic foot ulcer admissions-time from admission to investigation to discharge**

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Introduction: Diabetic foot disease with foot ulceration and associated osteomyelitis is a common complication of diabetes. Previous Irish audit data on diabetes foot ulcer admissions showed an average length of stay of over 20 days. We were interested to determine whether recent national initiatives in the management of foot disease have reduced the length of stay for diabetic foot admissions in our hospital**.** Material and Methods: To measure the length of stay for diabetic foot admissions under the care of the endocrinology team in our hospital between April 2017 and October 2018 and to determine what factors contributed to this length of stay. 28 patients with a total of 45-foot related admissions were included in the audit. Results: The average hospital stay was 27.4 days, with a wait time for an in-patient X-ray(n=21) of 1.0 days (SD= 1.70). Average wait time for an MRI foot (n=24) was 7.79 days (SD= 7.37) Vascular review was necessary in 19 admissions, with a wait time of 2.89 days (SD= 1.32). 18 admissions required PICC/MIDI lines inserted, wait time of 2.21 days (SD= 1.93). 22 patients were discharged on IV antibiotics with OPAT, with wait time from OPAT consult to review of 1.18 days (SD= 0.39). Conclusion: Despite recent developments nationally in the management of diabetic foot disease and community OPAT the length of stay for patients with diabetic foot disease in our hospital remains excessive with the biggest delay in access to MRI. A care pathway to improve access to MRI of the foot in patients with diabetic foot disease should significantly improve length of stay.

1. [↑](#endnote-ref-1)
2. [↑](#endnote-ref-2)